ANNUAL CONFERENCE IN DENVER

Notable advances in blindness prevention and problems still to be solved were the subject of discussion at the 1960 meeting of the National Society, held in a western setting.

DENVER, COLORADO was the scene of the National Society's 1960 Annual Conference, held March 30–April 1 in the Brown Palace Hotel. The majestic beauty of the Rockies and the warm and generous hospitality extended by the Colorado Society for the Prevention of Blindness contributed greatly to the success of the three-day meeting.

Officers of the Colorado Society who devoted much time and effort to advance planning and stimulating attendance, and who are in large measure responsible for the effectiveness of the conference are:

Mrs. Austen Brown, president; Mrs. J. Burris Perrin, first vice-president; J. Leonard Swigert, M.D., second vice-president; William H. Droegmuller, M.D., third vice-president; Harvey Bochenau, fourth vice-president; Harvey T. Sethman, secretary; Adolph Kunsmiller, treasurer; Mrs. Wayne Williams, chairman, Denver pre-school vision testing project; Wallis M. Reef, public relations chairman; and Arthur Becker, industrial chairman. Mrs. Marvis E. Quam, executive secretary, gave much valuable assistance in making local arrangements, publicizing the meeting, and handling the many details relative to the schedule of events.

Thirty States Represented

In attendance were approximately 400 delegates from 30 states, the District of Columbia and Canada. Enos Curtin, president of the National Society, presided at the luncheon on the opening day, March 30, and welcomed the conference members. The guest speaker, E. LaMar Buckner of Ogden, Utah, a member of the Board of Governors of the American Red Cross, gave an exceedingly fine and inspiring talk in which he outlined the goals in blindness prevention and the spiritual values involved in this great movement. His message was received with great enthusiasm.

Another highlight of the luncheon was the presentation by President Curtin of the first Winifred Hathaway Award, designed to give special recognition to the Teacher of the Year in the Field of the Partially Seeing. Miss Florence Donermeyer of Oak Park, Illinois, was selected for this honor, for the year 1959, from 28 recipients of state certificates as "teacher of the year." Details of the award presentation appear elsewhere in this issue.

Review of Scientific Progress

The afternoon session on the first day was devoted to a review of current scientific knowledge of causes of blindness and advances in the treatment of eye disease, under the chairmanship of Dr. J. Leonard Swigert.

Opportunities for saving and restoring sight were the subject of the morning symposium on March 31. Presid-

ing was Dr. Wilfred D. David, chief, chronic disease program, division of special health services, Public Health Service, U.S. Department of Health, Education, and Welfare. On the afternoon of that day experts in the fields of medicine and education discussed the problem of protecting eyes in childhood. Dr. Jean L. McMahon, medical director of the outpatient department, Denver Children's Hospital, was the chairman of this session.

A final panel discussion on the morning of April 1 was based on public relations techniques in the prevention of blindness program, with Harvey T. Sethman presiding.

A number of the conference papers appear in this issue; others will be published subsequently.

Pre-Conference Sessions

Preceding the conference one and a half days were devoted to orientation of executives and board members of state divisions of the National Society. These discussions, under the chairmanship of Dr. John W. Ferree, executive director, were based on the development of program activities, fund raising, and public relations. Fourteen states were represented, and it was evident that this exchange of information and ideas will produce excellent results.

Also preceding the conference the NSPB staff met with prevention of blindness workers in governmental and private agencies to discuss administrative and program problems. Among the subjects of concern to this group were the relationship of the two types of agency; control of sale and use of fireworks; mass glaucoma screening, criteria for referral and follow-up; prevention of blindness content of courses for teachers and nurses; and costs of producing films, kinescopes and various types of educational material.

A variety of interesting exhibits were on view during the conference. They featured vision screening devices, orthoptic techniques, optical equipment, publications, and services of prevention of blindness agencies, and they added greatly to the informational value of the meeting.

SEPTEMBER—SIGHT-SAVING MONTH

Sight-Saving Month, the National Society's annual campaign to alert American citizens to the value of proper eye care, will again be observed in September. Thousands of posters, leaflets and other material will carry the message: "HALF of all blindness is needless and preventable." Newspapers, radio and television will cooperate as in other years in publicizing this concentrated drive.

John D. Coleman, NSPB director of public relations and public information, will welcome inquiries from local prevention of blindness agencies and other groups wishing to plan special programs during the month.

APHA ANNUAL MEETING

The 88th Annual Meeting of the American Public Health Association will be held in the Civic Auditorium, San Francisco, October 31–November 4. It will be the largest gathering of public health specialists ever held on the West Coast. Among the sessions scheduled is one on "Eye Health of Children," to be held Wednesday afternoon, November 2. Dr. John W. Ferree, executive director of the National Society for the Prevention of Blindness, will preside.

This session is sponsored by the Public Health Nursing and School Health Sections of APHA, and by the National Society.

ADVANCES IN CATARACT SURGERY

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There is probably no surgical procedure in which more safeguards have been developed or from which better results are obtained than cataract extraction.*

DURING the past ten years, and more particularly during the past five years, there have been a number of changes in the technique of cataract extraction. Any deviation in an accepted surgical technique must, of course, be evaluated in terms of improved results. However, the visual results with cataract surgery prior to the Second World War were so outstandingly good that of every 100 patients who underwent the operation some 96 could expect material improvement in vision, provided the wound was closed with corneal-scleral sutures and the lens was removed within its capsule.

With such good results prior to the introduction of newer techniques, it is difficult to present statistical evidence that these modifications have made it more likely that surgery will benefit not only the 96 per cent previously aided, but also the four per cent who were not helped. Basically the new techniques have made cataract extraction safer so that the operation may be carried out in patients in whom the dangers of surgery in the past were so formidable that it was not undertaken.

Additionally, the new techniques have made good cataract surgery more widely available than ever before. In years past, such surgery was done by only a few surgeons in each large community, generally not in rural areas. However, so many safeguards have been built into the operation that it is now performed throughout the country. Young physicians in training today do a competent extraction of cataract that would astound their surgical forebears to whom this procedure represented the height of surgical virtuosity.

Infection Reduced

Infection, that *bête noire* of ophthalmic surgery, has been greatly minimized. Much of this decrease represents preoperative cleansing of the conjunctival sac by means of antibiotics, combined with the effectiveness of antibiotics in suppressing an inflammation if it occurs after the operation. The use of the corticosteroids and ACTH has also markedly minimized nonbacterial inflammations which previously complicated the results of surgery. In eyes which had been the site of uveitis not uncommonly the trauma of a cataract extrac-

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, Denver, Colorado, March 30, 1960.

tion acted as a stimulus to a quiescent inflammation and caused a severe reaction, sometimes with destruction of the eye. Now the administration of small doses of ACTH, cortisone or newer compounds may completely suppress this inflammation and not interfere with the normal healing processes. It should be recognized that the use of these potent compounds is a two-edged sword and that if given in excess they will suppress not only inflammatory reaction but also the stimulus which leads to the normal healing of the surgical incision.

Anesthesia has become much more effective. Retrobulbar injection of a local anesthetic and a block of the seventh nerve fibers to the lids to prevent squeezing has become routine with nearly all ophthalmic surgeons. Combined with this, in many instances, is preliminary intermittent massage of the eye which forces out fluid and results in an extremely soft eye. In years past a soft eye was regarded as undesirable in that it complicated the intracapsular removal of cataract in which counter pressure from the exterior of the eye was necessary to rupture the supporting zonular fibers. Now, with the use of different techniques for the removal of the lens itself, counter pressure plays a much smaller role and the zonular fibers are either mechanically or chemically ruptured. With a soft eye there is much less danger of losing vitreous, a complication which commonly leads to retinal detachment and other serious consequences.

Suturing Techniques

There continues to be considerable debate as to the best method of making the corneal incision and the placement of the conjunctival flap. Nearly all surgeons suture the cataract wound, and a large variety of techniques for suture placement have been described. Sutures may be placed either prior to the incision or after the incision. The tendency generally in this country is to place at least one or two before the incision and then, after the cataract has been removed, perhaps to reinforce the line of incision with additional sutures. The needles used for these sutures have become remarkably sharp and have permitted the use of suture material much finer than was previously used.

The standard suture material is 6-0 black silk, which has the handicap of requiring removal some days after the operation. To obviate the necessity for suture removal some surgeons have recommended the use of fine catgut. This has the disadvantage, though, of being nearly invisible and extremely difficult to manipulate, particularly if it is used prior to making the incision. Recently a dyed catgut has been released which does away with this difficulty but catgut has a tendency to coil and not to lie flat so that it may be difficult to use. The most recent modification in suture technique is the use of virgin silk, a fine strand approximately 10–0 size, which closes the incision beneath the conjunctiva and does not have to be removed. As many as six or eight or 10 of these may be used to reinforce the wound.

With firm suturing and closure of the surgical incision a bonus has arisen in making it unnecessary to patch both eyes of the patient following the cataract procedure and permitting him to arise from bed either the day of surgery or the day following. Sandbags are no longer used and the rigid

immobility formerly required to prevent rupture of the incision is not needed. With firm closure of the wound fewer complications have arisen from rupture, such as prolapse of the iris or failure of the anterior chamber to reform after the operation —common causes of glaucoma.

There continues to be a debate as to whether the cataract extraction performed with a complete iridectomy is better than one in which the pupil remains round. The complete iridectomy has the advantage of being associated with many fewer complications, with the exception of loss of vitreous which occurs more frequently. Eyes with round pupils are better optically and patients have less visual difficulty. This appears to be a question that never will be resolved and one on which surgeons will remain divided.

Use of Alpha Chymotrypsin

In April of 1958, Barraquer reported a series of cataract extractions facilitated by dissolution of the supporting zonula of the lens with an enzyme, alpha chymotrypsin. This enzyme has been known since 1933 to have selective action in dissolving certain proteins. Barraquer's report aroused immediate interest because the strength of the zonule in holding the lens in position is the limiting factor in the intracapsular (or complete) removal of cataract. The zonular fibers become weaker with advancing years but in infants, children and young adults they may be nearly impossible to rupture mechanically. After the age of 50 the zonular fibers become more fragile and may be ruptured more easily, and after 60 usually there is no particular surgical difficulty because of the strength of these fibers.

Alpha chymotrypsin, in dissolving the zonule, thus permits removal of the entire lens in patients in whom this was not previously possible. Its use has become very widespread and it is estimated that approximately 10,000 cataract removals per month are facilitated by this method. However, any step in cataract surgery which is not essential must not be used unless it offers definite advantages. Between birth and the age of 10 or 12 years, definite adhesions exist between the lens capsule and the vitreous and these adhesions are not ruptured by the use of alpha chymotrypsin. Thus, while the use of alpha chymotrypsin permits dissolution of the zonule, the adherent vitreous is removed with the lens and the eye is destroyed. For this reason most surgeons advocate that the compound not be used in individuals less than 20 years of age.

If the group under 20 years of age with cataracts is excluded, alpha chymotrypsin is indicated only in patients between 20 and 50 years of age. It is not necessary, however, in patients in this age group in whom the cataract has developed secondary to iridocyclitis, to atopic eczema, and several other conditions in which the zonule is weakened. After the age of 50 years it seems unlikely that it is necessary because the normally weakened zonule offers no serious obstacle to intracapsular lens removal.

Acrylic Lens Implants

In 1950 Harold Ridley first inserted acrylic lenses into the eye to correct the visual defect in cases of aphakia. The lens was implanted behind the iris in front of an intact posterior lens capsule at the time of an extracapsular

cataract extraction. Several hundred eyes were treated by this method. Eleven eyes have been studied after enucleation, following insertion of such a lens. In every case there was an inflammatory reaction of varying intensity. It seems quite evident that this procedure is not completely innocuous and it has been generally abandoned even by its originator.

In an attempt to overcome some of the disadvantages of the Ridley operation an anterior chamber implant to be placed in the eye some months after cataract removal was devised by Strampelli and later by Schreck and Scharff, and by Ridley. The presence of a large foreign body in the anterior chamber raises a number of questions concerning its possible influence on the eye. The surgical procedure required to introduce the anterior chamber lens causes some damage to the cornea. Since the lens does not touch the cornea, once inserted, it causes no damage to the endothelial surface. The iris root is distorted and becomes atrophic, and the anterior attachment of the ciliary muscle is attenuated because of the pressure of the foot plates of the anterior chamber lens. Inflammatory reaction is mild and there is no reason to believe that sympathetic ophthalmia may occur. Generally anterior chamber lenses have been recommended in patients with unilateral aphakia who cannot tolerate a contact lens. However, until the procedure has been more fully evaluated the use of these lenses must be considered in an experimental phase.

Indication for Contact Lenses

It should be evident that a less formidable method of correction of a unilateral aphakia is obtained by means of a contact lens. Usually a contact lens is indicated only in unilateral aphakia to compensate for the difference in image size arising in the aphakic eye and the normal fellow eye. Generally this optical condition occurs only when the cataract has followed trauma or has become mature or hypermature, necessitating removal, and the fellow eye is relatively normal. Despite the good optical results obtained with this method of correction, it is by no means recommended that every senile cataract be removed so as to give binocular vision. Most persons prefer to adjust to reduction in vision in one eye rather than undergo cataract surgery with the subsequent need for optical devices if the two eyes are to work together. Nonetheless in patients in whom a unilateral aphakia is present contact lenses work unusually well. Because of the incision in the superior portion of the eye the cornea is moderately anesthetic and irritation by the contact lens is not a complication. It is likely that 75 per cent of the patients to whom contact lenses are prescribed following cataract surgery wear them successfully. The factors determining the success or failure of the use of contact lenses is not the surgery itself but, rather, personal factors relating to the personality and the motivation of the patient.

High Degree of Success

There is probably no surgical procedure in which more safeguards have been developed or from which better functional results are obtained than cataract extraction. Nonetheless the operation is so greatly feared by many persons that they prefer blindness to the surgical procedure which would re-

store their sight. Research has yielded much information concerning the biochemistry and physiology of the lens and even the underlying abnormal mechanism which causes certain types of cataract. There is every promise that in the next few years the progress reflected in the removal of cataracts will be duplicated in research preventing the condition from developing.

SHOULD WOUNDS BE COVERED?

In an editorial which appeared in the *Journal of the American Medical Women's Association*, Dr. Alma Dea Morani stated that previous convictions on applying dressings to surgical wounds have been shaken. Surgeons at the University of Southern California have recently reported to the American College of Surgeons the advantages of the exposure-suction method in 440 cases of surgical wounds. Eighty-five per cent were healed by primary union within 21 days as the result of simple exposure to air and sunlight in a clean environment. Suction of any serosanguineous fluid was accomplished by a catheter in the operative site.

Exposed wounds, in addition to healing faster, are dry, clean and comfortable to the patient. In contrast, wound dressings decrease oxygen supply, collect serum and act as moist poultice for bacterial growth. Although open wounds have an adverse psychologic effect on some sensitive patients, the advantages of exposure therapy certainly outweigh this disadvantage.

Commenting on this therapy in the *Survey of Ophthalmology* Dr. Henry F. Allen writes:

"More liberal policy in regard to patching eyes after intraocular surgery is appearing in certain quarters. The trend among some surgeons at the Massachusetts Eye and Ear Infirmary is toward ambulation a few hours after cataract surgery, covering only the operated eye and uncovering the operated eye during the day after the first 24 hours." Dr. Allen's experience with this regime has been highly satisfactory over a period of two years or more.

"In general," Dr. Allen states, "if wounds are to be left exposed during the day, it would seem mandatory to cover them with a light gauze dressing during the night. The considerations which apply to large wounds are not pertinent to the type of incisions which follow ocular or maxilofacial surgery."

GLAUCOMA AND HEREDITY IN ICELAND

Blindness in Iceland, a small country where marriage among relatives is common, is four or five times higher than in the Scandinavian countries, reports Sveinsson K. Reykjavick in *Acta Ophthalmologica*. The leading cause is glaucoma.

In 25 years of practice the author recorded 1,561 glaucoma patients, of whom 66 per cent were male and 34 per cent female. In 714 patients a history of blindness, presumably due to glaucoma, was elicited for other members of the family. Only 15 of the total number of patients had secondary glaucoma. Of the primary cases 90.29 per cent were glaucoma simplex, 7.9 per cent chronic inflammatory, and 1.81 per cent acute.

EYE FACTS—Surveys have indicated that one child in 500 of school age has a visual handicap serious enough to require special facilities if he is to get maximum benefit from the opportunity for education. About 8,500 such children are receiving the attention required; 74,000 more are without it.

RESEARCH IN OCULAR EFFECTS OF RADIATION

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Devices useful to mankind can evolve from increasing understanding of the characteristics and effects of radiant energy.*

"AND, as he journeyed, he came near Damascus, and suddenly there shined round about him a light from heaven. . . .

"And Saul arose from the earth, and when his eyes were opened, he saw no man; but they led him by the hand, and brought him to Damascus."

Thus in verses three and eight, chapter nine of the Acts of the Apostles a writer nearly 2,000 years ago described the temporary effect of extremely intense visible light on the unprotected eye. Although in its full text St. Paul's case does not precisely fit our modern definition, we can surely consider him as one of the earliest reported cases of flashblindness.

Throughout history the general subject of radiant energy and its effects, good and bad, on living tissue has had more than usual public appeal. In terms of biological effects, one can, for this discussion, divide the electromagnetic spectrum into three portions, using visible light as the small central segment. By so dividing, the known effects of longer wave lengths beyond the visible range may be classified as non-ionizing or thermal. These effects are produced by trapping or stopping the energy waves in tissue and damage is caused by the resultant rise in tissue temperature. Wave lengths shorter than those visible, from ultra-violet to ionizing x-rays and gamma rays, in some manner change the molecular character of tissue components, altering growth or function, if not killing the organism.

Extensive Study Needed

In a sense ophthalmologic research interest divides itself into the same three portions. The industrial hazards associated with extremely high-powered radar devices have stimulated investigation into the effects of microwave energy on the ocular mechanism. X-rays are also a product of the tremendously powerful klystrons and magnetrons used in radar transmission. The presence of biologically hazardous long and short wave lengths has and does present problems for the researcher. We still have much to learn concerning the exact nature of the hazards and the most effective means of protection against them.

Much has been published concerning the effects of ionizing radiation. Ocular tissue changes may be immediate or delayed. Particular research

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, Denver, Colorado, March 30, 1960.

interest has been directed to the very early breakdown in the blood-aqueous barrier, which has certain prognostic value since it seems to be in direct ratio to dosage. Dr. D. V. L. Brown in 1955 published his observations concerning rapid changes in retinal nuclei following high doses of ionizing radiation to the head and eye. He and others have conducted continuing studies on delayed cataract development following sublethal doses of ionizing radiation.

Ocular Damage at Great Distances

Ocular effects of high intensity visible light have been the subject of much interest in more recent years particularly as we develop instrumentation to make therapeutic use of the thermal energy absorbed by focussing this light on or within the eye. It has been almost a decade since Dr. Heinrich W. Rose and Brigadier General Victor Byrnes, ophthalmologists at the USAF School of Aviation Medicine, predicted that observation of a source of visible radiant energy of the intensity of an atomic fireball could produce ocular damage at far greater distances from the point of detonation than those at which any other radiation or blast effects occurred. Subsequent tests in the laboratory and at the atomic test sites confirmed their predictions.

The immediate effects of high intensity visible radiant energy on the unprotected eye are primarily thermal and may be temporary or permanent. Flash blindness, a temporary effect, refers to the relative inability of a partially or completely dark-adapted eye to discriminate differences in contrast following exposure to bright light, with resultant lowering of visual acuity. The degree of reduced visual acuity and the length of recovery time are directly proportional to the intensity of the light source and the duration of ocular exposure. Manifestations of flash blindness may follow direct observation of a radiant energy source or may be due to light reflected from a source not in the direct field of gaze. In all cases the thermal energy incident on the eye is not sufficient to cause a chorioretinal burn. To the Air Force pilot, however, the temporary inability to see his instrument panel for periods up to two minutes following a flash can be disastrous.

Chorioretinal Burns

Chorioretinal burns, leaving permanent residual damage, result from direct observation of an intense radiant energy source such as the sun or an atomic fireball. Owing to image formation, the irradiance on the retina from such a source does not depend on the inverse square of the distance as it would on the skin, for example, but rather on the radiant emittance of the source, the pupillary aperture, and the attenuation by passage through the air and ocular media between the source and the retina. Thus, if we ignore the various attenuations, the energy incident *per unit area* of retina remains constant, although the size of the retinal image may vary. The chorioretinal burn is produced when the rise in temperature of the retinal pigment layer (where most of this incident radiant energy is absorbed) is more rapid than mechanisms for heat dissipation can balance.

A vivid recent description of the development of such a burn is contained in an article by Guerry and Wiesinger

in the January 1960 *American Journal of Ophthalmology*. They describe the explosion into the vitreous of the sudden massive build-up of steam within the confines of the choroid and retina as "occurring with a popping noise, similar to that heard when corn pops." These burns can be incurred at distances far greater than those at which other effects produced by an atomic explosion are observed. Drs. Mayer-Schwickerath and Littman, of Bonn, Germany, in developing the high intensity Xenon arc have led in putting light coagulation effect to clinical use.

Experiments with Filters

The various attenuations induced by its great distance and the atmosphere permit one to look at the sun for several seconds without permanent eye damage. The thermal energy emitted by the flash of an atomic explosion, however, is delivered relatively nearby, and so rapidly that the human blink reflex time (50 to 150 milliseconds) is not sufficiently rapid to protect the eye against flash blindness or chorioretinal burns. Many ideas regarding filters and shutters have been tried at various atomic field tests and in the laboratory. Colored filters of high density do offer protection but render it impossible for a pilot or ground technician to carry on his work under ordinary daylight or room lighting conditions. Electronically triggered filters can be made to close in microseconds but those tested so far seriously limit the visual field and require "power packs," adding bulk to a helmet or goggles. The mention of such a helmet to a pilot usually evokes something less than an enthusiastic response.

Beginning in the fall of 1957 knowledge gained about certain dyes having the property of changing from a clear to a colored state by the action of light resulted in initiation of a major ocular research effort by the USAF, directed to perfection of optically useful photochromic filters. There are organic and inorganic photochromic compounds, the organic dyes being various complex molecules of a chemical family known as spiropyrans. Properties change with temperature, pH, and the solvents used, so that there are literally thousands of variants. Recent developments by the research teams working with these filters indicates that "self-attenuating variable density filters for use in windows, canopies, goggles and optical instruments" are a real possibility.

Most helpful in this research, however, has been the fact that these color changes in response to light are triggered in the ultraviolet region of the spectrum. The color changes occur in a very few millionths of a second and are reversible. The efficiency of color formation is dependent on the intensity of the activating light. Since the dyes can be used as surface coatings, or be applied on a surface and laminated between layers, and do not require complicated triggering devices, we look forward to their development as relatively simple and inexpensive filters.

Sometimes we wonder what good can come from the awesome developments of this nuclear age. I believe the research in eye effects of radiant energy provides examples of how devices useful to mankind can evolve from increasing understanding of the characteristics and effects of all types of radiation.

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TRACHOMA VIRUS CULTURED IN CALIFORNIA

The first native American strain of the trachoma virus has been isolated and is being cultured by scientists at the University of California Medical Center, according to a recent report in *Scope Weekly*. The group has also isolated a trachoma virus from a patient living here who apparently acquired the infection in Pakistan.

The patient from whom the American virus was isolated is a 36-year-old machinist, long a resident of nearby San Jose, where indigenous cases of trachoma occur occasionally. He was treated for conjunctivitis for nearly a month with some symptomatic improvement. Subsequently both eyes became involved, the condition worsened, and a diagnosis of clinical trachoma was made.

The patient was referred to Dr. Phillips Thygeson of San Jose, clinical professor at the university. The research group with which he is associated immediately began attempting to isolate the virus.

Conjunctival scrapings were put in a broth saline containing streptomycin. Passages were started through chick embryos. On the second passage some evidence for the virus was found, and on the third the evidence was conclusive. The virus has the prescribed diameter and staining properties for trachoma, and a complement fixing test on the patient's serum confirmed that the agent is a psittacosis-lymphogranuloma venereum organism.

Four monkeys inoculated with sixth-passage virus from the American strain developed follicular conjunctivitis and the conjunctival scrapings contained many typical inclusion bodies. An effort is under way to determine whether any immunity has been conferred on the monkeys.

Vaccine trials are now being carried out with other strains by Harvard scientists and by a Navy group in Taiwan.

COURSES AT INSTITUTE

The Institute of Ophthalmology of the Americas announces that its Third Series of Post-Graduate Courses for Specialists in Ophthalmology will be given from September 12 through November 23, 1960. Catalogues and additional information may be obtained from Mrs. Tamar Weber, registrar of the Institute, New York Eye and Ear Infirmary, 218 Second Avenue, New York 3.

ADVANTAGES of the OPTICAL AIDS CLINIC

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In the clinic setting there is time for the painstaking study of each case by a team of experts; and for developing the visually handicapped patient's acceptance of the prescribed aid.*

THROUGH the ages the word "blind" has had a connotation of finality and helplessness. In the present day we have come to recognize that all blindness is not sightlessness, and with this recognition has come the need to define the word.

We speak of industrial blindness, tax exemption blindness, legal blindness, pension blindness and so forth. Defining a limit of blindness suggests the existence of some residual vision. Only in the past decade or so has any attention been concentrated on the problem of helping persons achieve maximum utilization of such vision. How incredible that the negative implications of a single word can have so paralyzed the will and blunted the initiative of science and society!

It has been estimated that there are 350,000 persons in the United States who are legally blind—that is, whose vision is less than 20/200 in the better eye. About 30,000 are added to this group annually. Seventy-five per cent of these people have some residual vision! If to this number we add the one million persons who have a relative visual handicap—that is, acuity in the better eye of 20/200 to 20/70—we have a formidable number of potential candidates for visual rehabilitation.

Contemporary efforts to deal with this problem may be traced to the first optical aids clinic established by Kestenbaum in Vienna in the 1920's. In the last ten years interest has developed rapidly, special impetus having been provided through rehabilitation research and demonstration grants by the Office of Vocational Rehabilitation of the U. S. Department of Health, Education, and Welfare.

In 1958 such a demonstration project was begun under Federal grant at the Washington University School of Medicine in St. Louis. Here in the department of ophthalmology an Optical Aids Clinic was established to demonstrate whether the fitting of such aids to persons classified as blind (corrected vision of less than 20/200 in the better eye) can increase their employment opportunities.

The broader purpose and philosophy of the clinic is to exploit to the

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Presented at the annual meeting of the National Society for the Prevention of Blindness, Denver, Colorado, March 30, 1960.

This study was supported in part by Demonstration Grant No. 226, Office of Vocational Rehabilitation of the Department of Health, Education, and Welfare.

TABLE I.

Relationship of Distance Visual Acuity to Reading Visual Acuity

Distance Vision (in the better eye, with correcting lenses)	Total No.	Achieve Reading Vision of:			Per Cent who can read 8 point type
		8 point* or better	9 to 12	Less than 12 point	
Less than 5/200	13	3	2	8	23
5/200–10/200	33	16	11	6	48
12/200–20/200	23	17	4	2	73
20/160–20/100	39	36	3	0	92
20/80–20/60	25	22	3	0	88
20/50 or better	25	25	0	0	100
Totals	158	119	23	16	

fullest the available vision of all persons who have reduced acuity. Thus, our efforts are directed at young and old, at the limited vision group (less than 20/70) as well as the industrially blind (less than 20/200).

Organization of the Clinic

Patients are seen at the Optical Aids Clinic on referral from four sources: public service agencies, such as the Missouri Bureau for the Blind and its vocational rehabilitation division, and the Missouri School for the Blind; private service agencies, such as the St. Louis Lighthouse-Society for the Blind, and the St. Louis Rehabilitation Center; university hospital and private hospital clinics; and physicians in private practice.

Each patient is seen by the clinic team which consists of a resident physician in ophthalmology, social worker, optometrist, and consulting ophthalmologist. After a detailed study by each of the first three of this team, the findings are reviewed and recommendations made with the consulting ophthalmologist.

Factors Determining Utilization

Seeing with optical aids and using them are not necessarily synonymous. Many variables enter into the acceptance and use of these special lenses. Chief among these is the existing level of vision. Although optical aids are not frequently used for outdoor or distance vision, the evaluation of distance acuity nevertheless forms a reasonable index for predicting success or failure in fitting the devices. Studies at our center reveal that ability to read newspaper print (8-point type) with the assistance of an optical aid can be achieved in the vast majority of persons having vision of 12/200 or better.

Practical help is rare for anyone whose vision is less than 5/200 in the better eye. But of 69 patients in our clinic having 20/200 or less in the better eye more than half could see 8-point type. About 70 per cent of all patients were supplied with some form of aid, the number increasing as distance vision levels increase. Despite the fact that the patients with the poorest visual acuity—and consequently the most powerful aids—were forced to function at extremely close distances, such as one or two inches, they nevertheless adapted to this limitation as well as patients with somewhat better vision.

Recency of loss of vision is a factor in achieving good results. The newly blinded cannot readily accept the altered visual status. They tend to expect the aids to restore previous seeing skills and habits.

Age seems to play a part chiefly by virtue of the fact that the largest groups of patients referred for examination were under 30 (34 per cent) and over 60 (41 per cent). For any given decade, however, the percentage of optical aids prescribed seems to lie between 60 and 80 per cent, being somewhat less in the first decade. The proportion of failures increases somewhat with age, our data indicating that below age 20 only 12 per cent of the aids prescribed were poorly utilized, whereas in the years beyond 60, 24 per cent were poorly utilized. Apparently the better adaptability of youngsters, and the resistance to change and to new experiences in oldsters are manifest here, as in refractions of the normally-sighted population.

Pathologic Process

The pathologic process is apt to play a role in the use of optical aids. This is pointed up by the incidence of disease entities for which aids were prescribed. Although the percentage of patients helped varied little with the particular structure primarily involved in the pathology, numerically the preponderance of aids were prescribed for macular degeneration, diabetic and vascular retinopathies and cataracts. It is apparent that these are diseases characteristic of the age groups most frequently encountered in this study.

Job requirement represents a major factor in the successful use of these lenses. Generally an alteration of work conditions is necessary, the usual problem being that the aids function at substantially shorter focal lengths than normal. With practice and some ingenuity this problem often yields to the efforts of the patient. However, ability to read 8-point type at one inch would obviously be of little value in many job situations.

By far the most important factor in the successful use of visual aids is the will to make them work. Here the social worker becomes invaluable in exploring and predicting the motivational potential of the patient. Here, too, one encounters problems in the older age groups. Some oldsters just do not want to read sufficiently to sustain them in the necessary reorientation of their reading habits.

Distance Vision

There are considerable limitations in the use of aids for distance vision. However, many patients who have subnormal vision will require them. In our series 122 prescriptions were written, 18 of them to assist distance vision. Most of these patients were also given some aid for close work.

In 10 of the 18 the assistance was in the form of a careful distance refraction and lens prescription. In others, telescopic spectacles were used. These magnify from 1.5 to 3 times normal size. They present problems because the greater the magnification the smaller the field of view. A telescopic lens which magnifies 1.8 times will limit the field of vision to 24 degrees, although the normal binocular field of vision is 200 degrees, almost ten times as wide. Telescopes which magnify 3 times, such as the inexpensive sportsglasses which one can wear affixed to the head by the conventional

TABLE II.

Disease Processes for Which Optical Aids Were Prescribed

Ocular Structure	Diagnosis	No. of Cases	Aid Prescribed	Per Cent Aids Prescribed
Cornea..... (10)	Scar of cornea	7	5	71
	Microcornea	1	1	100
	Keratoconus	2	2	100
Iris..... (5)	Anterior uveitis	1	1	100
	Aniridia	4	2	50
Lens..... (14)	Cataract, congenital	7	5	71
	Cataract, senile*	5	2	40
	Subluxation of lens	2	1	50
Optic Nerve .... (18)	Optic atrophy, congen hered.	12	7	58
	Optic atrophy, acquired	6	4	67
Glaucoma..... (6)	Glaucoma	6	3	50
Retina-Choroid... (50)	Albino	4	3	75
	Chorio-retinitis, inactive	14	10	71
	Chorio-retinal scars, trauma	1	1	100
	Retinopathy, diabetic	18	15	83
	Retinopathy, hypertensive-arteriosclerotic	2	2	100
	Retinitis pigmentosa	2	0	0
	Retrolental fibroplasia	8	3	38
	Retinal detachment	1	1	100
Macula..... (47)	Mac. degeneration, senile	36	25	69
	Mac. dysplasia, congenital	8	6	75
	Mac. degen., myopic	3	3	100
Nystagmus..... (7)	Nystagmus, congenital**	7	7	100
Miscellaneous.... (4)	Coloboma, choroid, congen.	2	1	50
	Homonymous hemianopsia	2	2	100
	Totals	161	112	

* Two cataract diagnoses reported also under macular degeneration.

** Only those cases of nystagmus not associated with other diagnoses listed above.

spectacle temple-pieces, will limit the field of vision to 13 degrees. Since they also produce much motion parallax, and a disturbing sense of closeness, they tend to be most useful in static viewing—such as the blackboard in school, or television and movies.

Patients with irregular corneal scars or corneal diseases such as keratoconus may be benefited greatly by the use of contact lenses or multiple pinhole spectacles.

Near Vision

The Optical Aids Clinic finds its greatest area of usefulness in problems associated with near vision. This has been the experience of all workers in

the field. The devices available for the improvement of reading and other close visual tasks literally number in the hundreds, thus providing a basis for widespread confusion in relation to proper selection. Correct fitting depends not upon the wide variety of devices available or upon the individual bias of the examiner but rather upon the specific factors relating to visual acuity, age, job requirement and motivation.

Practically all devices for improving reading vision involve shorter focal length, smaller field of vision, and interference with existing distance vision. All of these are obstacles to utilization, and the examiner is responsible for selecting that device which will most nearly fit the specific requirements of the patient and provide the least displacement of former or existing seeing habits.

Methods of Magnification

Since the basic function of these near vision aids is to enlarge the retinal image, several methods of magnification may be employed. The examiner generally prefers devices which can be worn in spectacles or affixed to the head. They have the advantages of freeing both hands and better potential for illumination of the reading material. The simplest of all such devices are the stronger convex lenses found in the test cases of every ophthalmologist. We have found that more than half of these patients can be fitted in the course of the ordinary refraction procedures simply through the use of stronger-than-usual lenses.

So-called microscopic lenses represent a further extension of this principle with higher-power lenses than those available in the usual lens test cases. As progressively stronger lenses are used certain disadvantages become apparent in the form of smaller visual field and shorter focusing distance. The very high powers produce a high degree of aberration.

Lenses have been developed by American Optical and American Bifocal Companies, using plastic and glass respectively, which tend to eliminate the aberrations of the higher-power lenses by grinding aspheric (or paraboloid) surfaces. These provide better vision than trial case or microscopic lenses in that the field of vision remains clear to the very edge of the lens, but the handicap of short working distance remains. A simple lens which magnifies 10 times requires that the print be held one inch from the front surface of the lens. Adequately motivated patients will utilize these microscopic and aspheric lenses despite their limitations. We have written 38 such prescriptions (37 per cent of all near-vision corrections prescribed).

Frequently the retention of distance orientation can be accomplished by using a true bifocal with a strong reading addition. Such lenses are manufactured by the Continental Company in their low vision series. The same effect may be achieved by using half-lenses, recently attaining fashionable acceptance again after a lapse of 30 or 40 years.

The principal advantage of the telescope in close work is that it provides magnifications similar to corresponding single vision lenses, but with longer focal length. Unfortunately, this benefit is somewhat diminished by further reduction in the field of view,

Older patients will work out their own solutions to their visual problem. most often employing a hand-held

magnifier. These and various stand magnifiers—illuminated or not—were only infrequently the device of choice in our series (4 per cent). However, in many instances where no new prescription was given the reason was that the patient was doing an adequate job with just such a device.

Among auxiliary devices and conditions that facilitate the use of optical aids are: proper illumination, generally increased in retinal-macular disease, decreased or shaded in lens and corneal diseases; reading stands or easels to support books, typing copy, music, or other materials. Day to day reproduction of identical reading conditions is helpful in adapting to aids.

Why an Optical Aids Clinic?

Despite the plethora of special devices available to these patients, it must be re-emphasized that over half of them can be fitted with the ordinary lenses available in the trial case. If this is so, why then should we have an optical aids clinic?

There are several good reasons. First, if it is true that the fitting of optical aids is merely an extrapolation of ordinary refracting methods, then it is equally true that such additional effort requires additional *time*, and this additional time is disproportionately great. In our clinic a total of three or four hours is spent on each patient. Such lengthy studies are not possible in a physician's office. This does not mean that the ophthalmologist in private practice is incapable of performing these services—they are rather elementary for him—but it is just not practical.

The team effort in the clinic yields rewards in terms of understanding the patient's limitations as well as his motivations. We may benefit considerably from the social worker's appraisal of the case.

A clinic provides for the accumulation and evaluation of data, and the opportunity to utilize this information clinically.

The therapeutic approach here is exaggerated, painstaking and often repetitious. Each patient enters with a negative, more or less hostile attitude. His hopes have been built up and dashed against the rocks of disillusionment before. Not only must the physician demonstrate visual improvement, he must also "reach" the patient and establish a rapport. The patient ego must be supported by progressively demonstrating and emphasizing his successes; this may require repeated contacts with him.

Overcoming Prejudice

Deeply rooted superstitions and prejudices can best be overcome in the framework of the "super-specialist," the "supreme court" for this patient. Thus a climate is developed for acceptance of the examiner's recommendations and pronouncements, one difficult to achieve in the more intimate relationship with the family ophthalmologist. Here, we can destroy more readily such notions as:

Using the eyes may hurt them, and they can be saved by not reading or sewing.

It is harmful to the eyes to hold print too close. (Nothing could be farther from the truth. The shorter distance actually gives added magnification, and is only disturbing to the extent that the patient becomes fatigued if he is forced to exercise more accommodative effort than he can tolerate with comfort.)

Strong glasses hurt the eyes.

These and other unfounded notions are dispelled by example, demonstration, explanation and reassurance.

Still another reason for this clinic is the cost of maintaining the necessary equipment and supply of visual devices. Often the working distances and refraction room set-up are different in an optical aids clinic from those in the ophthalmologist's office. Most of the refractions are performed at five (or 10) feet, rather than the customary 20 feet. Charts feature additional graduations in size of the largest letters.

Training, practice and encouragement of the patient are important factors in adaptation to an optical aid. With high magnification devices and short working distances the patient is limited to a few words at a time, or even a few letters at a time. He cannot read by scanning, but must learn anew, holding the head steady while moving the printed page across the field of view. The family must be informed so as to be helpful and encouraging. Particularly in the case of children, the seeing potential is realized by the physician, teacher and parents, acting as a coordinated team.

Abilities Stressed

In summary, we take the position that these patients are not partially blind, they are *partially sighted*—and the purpose of the optical aids clinic is to develop and exploit to the fullest whatever vision exists. Our objective is to exploit their abilities—not their disabilities.

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JUDGE ROBISON HONORED

Judge Henry J. Robison, of Columbus, Ohio was one of 13 alumni of Kent State University to be honored with a citation during the recent celebration of the University's 50th Anniversary.

Judge Robison received an honorary Ph.D. degree from Kent several years ago. He has devoted his life to public welfare, and has served as state chairman of the Ohio Society for the Prevention of Blindness since its inception in September 1957. His interest in the Society's program and his active support have been in large measure responsible for its success.

NSPB ANNUAL REPORT

The 1959 Annual Report of the National Society records significant progress in early detection of eye trouble among all age groups, in the prevention of eye accidents and the support of research in the blinding eye diseases.

Community-wide programs aimed at finding men and women with early signs of glaucoma were sponsored in 14 states. More than 58,000 youngsters between the ages of three and six living in 22 states received eye tests given by volunteers trained by the Society's staff. Over five per cent were referred for eye care.

STRABISMIC AMBLYOPIA

Diagnosis, Treatment and Prevention

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With the introduction of new diagnostic and therapeutic methods this condition has become a major project of laboratory research.*

AMBLYOPIA is a rather common condition, encountered almost every day in our practice. If not recognized and treated early in life it can permanently impair the patient's binocular vision. With further advancement of technology, professions requiring good binocularity are becoming increasingly numerous. Thus the choice of a future career is already considerably limited for the young amblyopic person. Every attempt should be made by the physician and his helpers to diagnose this condition promptly and early in life, and to treat it effectively before irreparable damage results.

Amblyopia, or poor vision, occurs in many forms. It may be congenital, or due to anatomical damage of the visual pathway. It may be caused by an uncorrected refractive error, a difference of refractive error in each eye (anisometropia), or it may follow long-standing ocular deviation. Only in the latter form, which seems to be the most frequent one, do we speak of strabismic amblyopia. It develops as a result of prolonged suppression of one eye during an adaptive response of the visual apparatus, in order to avoid double vision or confusion which occur when one eye deviates. Suppression is initially momentary and disappears on monocular stimulation. However, it sometimes becomes habitual and persists even monocularly, in which case we find decrease of central vision in one eye.

In contrast to congenital or organic amblyopia, where poor vision may be found in both eyes, strabismic amblyopia is always monocular and in many cases reversible by appropriate means. The old concept that amblyopia is the result of disuse of the eye cannot longer be maintained. In fact, even in the presence of deep central suppression such an eye is used in many ways. The process of suppression is an active one; thus it is most unlikely that visual loss is due to passivity or non-use. Furthermore, recent investigations have shown that in strabismic amblyopia only certain higher visual functions are disturbed, namely those which are connected with seeing in bright light, and with form vision.[1,2] Other functions are less disturbed or, under certain conditions, remain essentially normal. We can then state that strabismic amblyopia is a selec-

* From the Department of Ophthalmology, College of Medicine, State University of Iowa. Presented at the Annual Conference of the National Society for the Prevention of Blindness, Denver, Colorado, March 30, 1960.

tive, functional impairment of central visual acuity in one eye in the presence or with a history of strabismus.

Diagnosis of the Condition

The diagnosis should not be too difficult. A difference of two lines on the test chart between the two fully corrected eyes is sufficient proof of amblyopia if no other ocular anomalies can be elicited. Much depends, however, on the manner in which the visual acuity is taken. It is of paramount importance that illumination of the test chart and the examining room remain constant during measurements. Only recently it was demonstrated that visual acuity of amblyopic eyes showed relative improvement in reduced light conditions.[2] Visual acuity may also appear to be normal or less reduced if measured with the illiterate E, and on the other hand show marked reduction if the child is directed to read the Snellen chart. This interesting phenomenon, which is quite frequent in amblyopic people, has been called "crowding." A disturbance of recognition seems to be paired with inability to disentangle reading symbols when they are crowded together on one line, as on the charts customarily used. This fact should always be kept in mind by the examiner, and recordings of visual acuity should indicate which method was employed. The Snellen reading chart and the illiterate E are used for visual screening of children, and the marble test is suitable for the younger group. In this test the children are asked to place marbles in holes on a plate, and the facility they exhibit in doing so indicates, at least, whether or not useful vision is present.

Physicians and nurses who are not accustomed to give daily acuity tests may be reminded in this connection that children not infrequently develop an unexpected shrewdness in cheating during the procedure, perhaps in an attempt to perform well. Special care must therefore be taken to occlude one eye firmly with a black patch, or better, with elastoplast, while the other eye is being tested.

Recent advances in the treatment of amblyopia have put emphasis on another important diagnostic step: the determination of fixation behavior. Fixation in the amblyopic eye may be central, parafoveal, paramacular, eccentric, or wavering. Observation of the corneal reflection while the patient fixates a light source with the other eye covered is still a widely used method of determining the mode of fixation. Refinement of our diagnostic instrumentarium, however, has shown that this method is by far too crude to indicate finer fixation anomalies. After introduction of the visuscope,[3] the modified ophthalmoscope,[4] and fixation photography,[5] non-foveal fixation was found to be present more frequently than previously assumed.

Therapeutic Approach

Once amblyopia has been diagnosed the therapeutic approach will vary according to the age of the patient and his fixation behavior. Adequate refraction should be performed and glasses should be worn for at least a month before other therapy is begun.

If central fixation is present permanent occlusion of the sound eye combined with fixation exercises of the amblyopic eye remains the treatment of choice. In our opinion occlusion should be constant and carried out for at least six months before being

abandoned. This therapy requires the greatest cooperation from parents, children, and immediate family. Social workers, nurses, and teachers may be of great help in reinforcing this form of treatment. If a patch is torn off by the child as soon as the family is out of sight it has little therapeutic effect. The resourcefulness of a child in ridding himself of this burden is unimaginable.

If non-foveal fixation has been diagnosed occlusion of the sound eye rarely is successful in children over five. In fact, it is now thought that such treatment reinforces abnormal fixation behavior, and it is therefore contraindicated. In the past this condition presented a great therapeutic problem. Occasionally total, or temporal occlusion[6] of the amblyopic eye broke up the faulty fixation behavior, or surgical alignment of the eyes resulted in a spontaneous normalization of fixation. Generally, however, these patients were given up as hopeless, and were forced to be content with an eye having less than 6/60 vision.

It would exceed the scope of this paper to discuss the pathophysiology of eccentric fixation. It may suffice to state that this condition develops as a result of longstanding deviation of one eye. An abnormal fixation reflex develops and the constantly stimulated eccentric retinal area becomes the center of orientation in subjective visual space. With the sound eye covered the patient will continue to use this eccentric retinal area for fixation.

New methods to combat this complication of amblyopia were developed successfully on the continent by Bangerter (pleoptics)[7] and Cüppers (afterimage method).[8] These techniques are still relatively unknown in this country. Bangerter designed the pleoptophor which permits binocular observation of the patient's retina. The instrument contains a strong light source which illuminates and dazzles the central as well as the peripheral retina, including the eccentric area used for fixation. Subsequently, light flashes are directed to the macula. This results in normalization of the fixation behavior. Once this has been achieved the children are required to perform various tasks on ingeniously designed machines, where macular vision is reinforced and coordinated with the senses of touch and hearing. We have no experience with these methods, mainly because the instrumentation is very expensive.

A slightly different approach was developed by Cüppers who introduced the afterimage treatment.[4] His instrumentation is simpler, less expensive and space-consuming, and we have been working with afterimages for some time now.[8] The results are very encouraging. Afterimages are created with the euthyscope by prolonged bright illumination of the fundus while the macula remains protected by a black disc. The patient then perceives the afterimage, the center of which corresponds to the projection of his macula in space, and which persists after the original stimulus has been withdrawn. Psychologically this afterimage has the value of a real object, i.e. it can be fixated. The eccentric area is thus eliminated temporarily from the visual act. Repeated treatments will result in normalization of the fixation behavior and subsequent improvement of vision.

While the introduction of pleoptics has no doubt advanced our thera-

peutic armamentarium considerably, the treatments are rather time-consuming. Sessions of 30 minutes twice daily are required, often for several weeks before success becomes apparent. Excellent cooperation and alertness on the part of the patient, and a great deal of time and effort on the part of the physician or technician are necessary. These limitations rule out on the one hand children under five, and on the other hand the busy practitioner as therapist. Pleoptics must, therefore, at the present time be confined to larger eye centers where personnel and facilities are available for the training of amblyopic patients.

Amblyopia schools, similar to Bangerter's "Sehschule" in Switzerland are, of course, the ultimate goal, for the children would not have to be isolated and could attend regular school while receiving daily intensive treatments.

Prevention through Early Detection

How can amblyopia and especially its complications be prevented? The best prevention lies in its early detection. As soon as a mother becomes aware of a deviation of the eyes of her child she should consult an ophthalmologist.

Pediatricians, general practitioners, social workers, public health and school nurses, and teachers can greatly aid in educating the public and guiding these children into the proper channels. Prevention of amblyopia can start as early as infancy, once an ocular deviation has been diagnosed. Alternating occlusion in infants will frequently prevent development of deep suppression, or other sensory anomalies, until an age is reached when a more adequate examination or even surgery can be carried out. The fallacious reassurance offered to the anxious parents by their physician that a child "may outgrow his squint," or advice that treatment should be delayed until preschool age quite frequently is responsible for the development of an intractable case. Regular visual screening carried out by pediatrician, family physician, or school nurse often reveals amblyopia in a stage where it still responds to occlusion treatment alone.

In cases of non-foveal fixation the introduction of pleoptics has brought new hope for a condition which hitherto was thought to be incurable.

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GLAUCOMA DETECTION AMONG RELATIVES OF GLAUCOMA PATIENTS

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This current study has revealed a higher incidence of the disease than most investigators have found in testing groups unselected as to family history.*

THE Prevention of Blindness Society of Metropolitan Washington is currently making a study of persons 40 years of age or over with a stated family history of glaucoma. Among 727 screened since January 1958 we have found 30 (4.1 per cent) who have chronic simple glaucoma confirmed by ophthalmological examination. None of these persons had any previous awareness of eye disease. In addition we found nine with previously known glaucoma, four of whom had discontinued treatment. The screening tests were a means of finding and talking with these persons and getting them back under medical care.

An additional 189 relatives between 20 and 39 years of age have been screened. No confirmed positives have been found in this group yet, but reports are pending on five referrals.

Priority in Testing

We gave priority in our testing to relatives of known glaucoma patients because investigations in the heredity of glaucoma have shown strong familial tendencies in this disease. In the series reported by Posner and Kellerman in the American Journal of Ophthalmology for November 1955, a positive family history of glaucoma was obtained in 13.5 per cent of 199 patients with primary glaucoma. Of the 192 of their relatives who were examined, eight, or four per cent, were found to have definite primary glaucoma. Eleven were considered borderline cases.

Our study was undertaken from a different standpoint. We wanted to determine how many unsuspected glaucoma cases could be found on screening a group of people who stated they had a relative with glaucoma. Dr. Posner started with glaucoma patients and then tested 192 of their relatives. We started with 727 individuals who apparently had healthy eyes and who stated that they had a relative with glaucoma. We have not made any attempt to verify the patient's statement regarding family history of the disease.

Results of Detection Tests

We have been interested in comparing the results of detection tests for glaucoma with those in other diseases. According to estimates by the U. S.

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, Denver, Colorado, March 31, 1960.

Public Health Service and the voluntary agencies concerned a chest x-ray finds one case of tuberculosis in 1,000; a routine smear for cancer detection finds four in 1,000; and a urine test in adults over 30 finds seven cases of diabetes in 1,000. Eye tension tests in adults over 40 find 20 cases of glaucoma in 1,000. Our tension and fields test in relatives of glaucoma patients has found 40 in 1,000.

Finding the Relatives

We have used two methods of finding people who have relatives with glaucoma.

First, in all our detection work we have asked each person tested whether he had a relative with glaucoma. Besides our tests for the group of relatives of glaucoma patients we have done a series of approximately 7,500 tests of persons unselected as to family history of glaucoma. This larger series of tests was done outside the offices of the Society at 28 Lions or other service clubs, three department stores, an insurance company, a newspaper office, and at the U. S. Department of Health, Education, and Welfare.

When a person registering said that he had a relative with glaucoma, the relationship has been noted and a red tab put on the registration card. All cards with a red tab have been put in a diary file so that these persons can be invited back for a recheck once a year. We now have 916 cards in this file. Only 727 were included in the present report because the remainder were under the age of 40. It seemed advisable to restrict our study to a group of glaucoma relatives of age 40 and over because many investigations of groups unselected as to family history of glaucoma have used that same age group. The incidence of glaucoma found in this unselected group has usually been about two per cent. Our series of 7,500 also shows an incidence of confirmed glaucoma of about two per cent.

Second, after careful discussion with our Glaucoma Advisory Committee, which was appointed at our request by the D. C. Medical Society, it was decided to offer in the offices of the Prevention of Blindness Society by appointment free glaucoma detection tests to relatives of known glaucoma patients. Announcements of the tests made by newspapers, radio and TV stations have brought eager and appreciative response each time they have been made.

Types of Tests Used

In most of this series we have given three tests: the Snellen test for visual acuity, the Harrington-Flocks Visual Field Screener, and a test of intraocular tension using a Sklar (jewel) model Schiøtz tonometer with a 7.5 gram weight and the 1955 calibration scale. The tension test was unanimously approved by our Glaucoma Advisory Committee as the best screening test for early glaucoma. The Harrington-Flocks fields test has been included because we wanted to find out whether we could pick up some cases missed by the tension test, and we hoped that we might possibly add to the evaluation of this relatively new device. The Snellen test has been included for medicolegal reasons and because we have found we could give a valuable additional service by referring people with subnormal vision for correction of possible refractive errors. It is alarming to find a considerable number of persons who are

driving cars with 20/50 to 20/100 vision in the better eye.

Because of lack of time, space or personnel we have occasionally had to omit the fields test. Among our 30 confirmed positives seven were not given this test. Our results seem to indicate that it is desirable and worth while to include it in screening for glaucoma.

Testing Team

Our team consists of seven persons: a registration clerk; one technician to test visual acuity; two technicians to use the Harrington-Flocks screener; one nurse or social worker to record the tension and give the report and glaucoma pamphlet to the negatives; one medical social worker to interview all those who have borderline or positive results on screening; and one ophthalmologist to test the tensions. With this team the line moves smoothly at the rate of about five persons every fifteen minutes. We can comfortably screen about 60 persons in a three-hour period with a coffee break after the first two hours.

Materials used in the testing included: printed 4″ x 6″ registration cards, Snellen test chart and window cards, two Harrington-Flocks screeners, two Sklar (jewel) model Schiøtz tonometers, ophthaine anesthetic, and ether or distilled water to clean tonometers. Also report forms for those with negative results, referral forms for those with positive results, recheck cards for borderline results, and pamphlets, "Glaucoma — The Sneak Thief of Sight."

Basis of Referral

Our basis of referral to ophthalmologists for full medical eye examinations has been as follows: those with a tension of 23.8 mm.Hg or over, or those with a difference of 4.0 mm.Hg or over between the tensions of the two eyes; also those with tension of 20.1 or less but who miss two places on the fields test. In the beginning we did very little rechecking. However, since we found some confirmed positives with tension as low as 21.9, we decided to recheck these results. If the tension is no lower than 21.9 on several rechecks, the person is referred for medical eye examination. In order to avoid unnecessary referrals we also have found it helpful to recheck those with a tension of 23.8 before referral.

Of our 30 positive cases, 22 were referred on the basis of the tension test, seven on the basis of both tension and fields test, and one because of field defects only. The latter is a 53-year-old woman whose tension at the time of our screening test was 20.1 in both eyes. Both eyes showed field defects.

Of the 30 positives, three who were referred had a tension at the time of screening of 20.1 or 21.9 in both eyes.

One referral was made of a man whose tension was 13.1 in the right eye and 17.0 in the left, a difference of about 4.0 between the two eyes. He also showed field defects at the time of screening which indicates the value of the fields test in helping to make a decision about referral. Both the father and uncle of this patient had glaucoma.

Another of the 30 positives was a woman with a tension of 49.8 in both eyes at the time of screening. She showed no defect on the Harrington-Flocks screener test and was unaware of any eye trouble. Another woman had a tension of 38.8 in both eyes but no field defect and no complaint of eye trouble. Her mother and her nephew both had glaucoma.

How Referrals are Made

The medical social worker interviews all persons having a borderline or positive screening result. The decision to recheck or refer is made jointly with the ophthalmologist. Some cases are rechecked at the same testing session. Others are asked to come back to the next testing session, which might be in a few days or few weeks.

Referrals are made directly to certified ophthalmologists or to eye clinics, depending on the financial situation of the person referred. Patients are referred back to their own ophthalmologist if they have one. Others who wish private care are given three names in rotation from a list of certified ophthalmologists. Our findings are given on a referral form which has a space for the ophthalmologist or eye clinic to record the results of the medical examination.

Results of Referrals

Of 727 relatives of glaucoma patients over 40 years of age who were given the screening tests, 45 were referred for full ophthalmological examination. Among these were 30 who proved to have confirmed glaucoma.

Since this is a current study, six reports on our referrals are still pending. In seven others the persons are under observation or further tests are being done. When these reports are in, undoubtedly there will be additional confirmed cases of glaucoma. We made only two referrals which were found to be negative on medical examination.

Medical Reports

We are fortunate in getting excellent cooperation from the ophthalmologists and eye clinics. In some cases the forms are mailed back to us and in others we get the report by letter or telephone. Patients often call to thank us for helping them to discover early glaucoma which had been entirely unsuspected. One of these was a prominent Washington physician who was tested in our booth at one of the scientific assemblies of the D. C. Medical Society. His father had glaucoma, but this physician had not realized that it was especially important for him to have periodic eye examinations. In all instances we have obtained medical confirmation before counting the case as a positive glaucoma or not.

Age and Sex Distribution

There were twice as many women as men in the group of 30 positives. Ten of the positives were 40 to 49 years of age; 10 were 50 to 59; nine were 60 to 69, and one was over 69.

Analysis of Relationship

The relationship of the person said to have glaucoma to our 30 positive cases was as follows: grandmother 1; father 5; mother 9; brother 1; sister 4; aunt 1; combinations 9.

The nine combinations are: grandfather and sister 1; mother and father 2; mother and brother 1; mother and cousin 1; mother and nephew 1; father and sister 1; father and uncle 1, and father and two great aunts 1.

Recheck of Screening Results

The plan of offering rechecks to borderline tensions (21.9 and 23.8) has been most helpful. It cuts down the number who are referred and found negative on medical examination. In a few cases, where persons have been reluctant to seek an ophthalmological examination, we have rechecked tensions of 25.8 and 28. If referral still

appeared advisable after the recheck, people then seemed more ready to accept our advice.

Rechecks of the Harrington-Flocks Visual Field Screener have been done for the same reasons.

Importance of Follow-up

A careful interview at the time of referral is very important in order to discover anything in the person's attitude or circumstances which might prevent him from obtaining a medical eye examination. We try our best not to make the person unduly alarmed but sufficiently concerned to consult an ophthalmologist or to attend an eye clinic.

We keep in touch with the patient until his physician has established a diagnosis of glaucoma or ruled out this condition. For example, if the patient has failed to return for completion of the examination, we get in touch with him and urge him to return to his doctor.

Those with negative screening results are given an opportunity to ask questions and on request are given the names of three ophthalmologists. The negatives are informed that their cards will be placed in a diary file and they will be offered a free recheck annually. We urge them to tell their relatives about the screening tests and we give them glaucoma pamphlets for themselves and for their relatives.

Educational Values

Giving glaucoma screening tests to selected groups is only one way of helping to find early glaucoma. We need to let everyone know the danger of this insidious condition and what can be done to prevent blindness. During the screening sessions we have an excellent opportunity to teach the facts to the general public. Although we find it difficult to get simple health information printed in the newspapers, it is quite easy to get newspaper space and radio and TV time to advertise our free tests. And the information campaign is tied to the service we are giving.

Summary

In a group of 727 relatives of glaucoma patients 40 years of age or over who were given screening tests we have found 30 persons (4.1 per cent) with glaucoma as confirmed by a full ophthalmological examination. This is twice the incidence which most investigators have found in testing the same age group unselected as to family history of glaucoma.

DANGEROUS CAPSULES

Unlabeled carbon dioxide capsules, often used in mobile toys such as automobiles, airplanes, and guns, unfortunately cannot be distinguished from unlabeled cartridges used in oxygen masks. Oxygen capsules used in a toy are likely to explode it into dangerous metal fragments. Carbon dioxide capsules in an oxygen mask can cause death to the wearer. *National Student Traffic Safety Tips & Cues* suggests that this hazard be investigated and that capsules be carefully labeled.

POPULAR GLAUCOMA PAMPHLET

"How Is Eye Pressure Measured?" is the title of a four-page pamphlet published by the Prevention of Blindness Department, Lighthouse—Society for the Blind, St. Louis, Mo. Written by an ophthalmologist, it explains in simple terms the facts about glaucoma, and the method of using the tonometer. Emphasis is placed on the fact that glaucoma, discovered early and successfully treated, rarely causes loss of vision.

A REAPPRAISAL OF VISUAL PROBLEMS IN PREMATURES—A PROGRESS REPORT

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A recheck of prematures at ten years of age reveals a higher percentage of eye defects than would have been predicted on the basis of previous knowledge.*

DURING the period of 1940 to 1950 retrolental fibroplasia, a condition developing in the eyes of prematurely born infants, became the leading cause of blindness in the preschool age group. At that time the level of exact knowledge of the growth and development of the eyes of prematures was very low. When intense research was started to determine the cause of retrolental fibroplasia it was hindered by this lack of background knowledge upon which to interpret abnormal findings in the eye. In the early 1950's it was found that the liberal use of oxygen in the immediate post-natal period was a causative factor in this disease. The strict curtailment of oxygen both in duration and amount has reduced both its incidence and its severity.

During this period of research a great deal has been learned about the basic growth and development of the eye in the premature infant. Nevertheless, there are still great gaps in our knowledge.

As yet we don't know specifically why oxygen should have this adverse effect on the growth of the retina. We can speculate on many apparently valid reasons, such as the change from 50 per cent in-utero oxygenation of the baby's blood to the 90 per cent oxygenation that exists within an hour or so after lung breathing begins. We know that the retina before eight months of gestational age does not have a complete vascular system, and that its peripheral portions are required to obtain their oxygen supply from the underlying choroid. We can assume that the law of supply and demand exists, and hence an overabundance of oxygen from the choroid has an inhibiting effect on the growth of vessels in the retina. Animal experiments indicate that the overabundance of oxygen at this time can actually cause the retinal vessels to shrink and become obliterated.[1] At a slightly later age a tremendous effort is made by the retinal vessels to grow out to the periphery of the retina, where they would have grown had not prematurity intervened. This effort suddenly to accomplish a process that usually is gradual results in the violent overgrowth of retinal vessels that constitutes the initial clinical appearance of retrolental fibroplasia.

* Presented at the annual conference of the National Society for the Prevention of Blindness, Denver, Colorado, March 31, 1960.

A big gap in our knowledge is that we don't know why there should be this sudden effort made to revascularize the retina, especially if this should be on a purely supply and demand basis. Presumably if an overabundance of oxygen from the choroid were sufficient to produce a shrinkage of retinal vessels there should be ample oxygen still available from the choroid to allow for a gradual maturation rather than an explosive one.

Perhaps a concept as simple as supply and demand is inadequate to account for this phenomenon. Perhaps the sudden change from 50 per cent to 90 per cent oxygen has much more profound effects than simply causing an attenuation of the immature retinal vascularity. A better concept might be derived from recent work done by Ashton in England.[2] This suggests that the retinal vessels are attenuated by pressure from without the vessels, such as edema in the surrounding retina. This would mean that these developing vessels are squeezed shut rather than shrink up from disuse. The sudden overgrowth could then be explained by the revascularization of the retina after disappearance of edema.

We now have to explain the edema. There are some indications that oxygen can be an actual poison by interrupting certain enzyme systems in the metabolism of the retina. If this is the case, these enzyme systems might also be experimentally damaged by other known enzyme poisons. Experiments along these lines have given mixed results: iodo-acetate will give similar results, ionization by x-ray will not.[3]

Treatment of RLF

The very fact that we don't know what oxygen does here, whether it be an inhibiting substance on a supply and demand basis or an actual tissue poison, accounts for a difference of opinion as to the proper treatment of cases of retrolental fibroplasia in the active phases of the disease. One opinion states that the supplementary use of oxygen is to be avoided whenever possible,[4] the other that oxygen should be given when retrolental fibroplasia appears and continued until the retina matures if necessary.[5,6] Both have reasonable bases for either course. Both have shown good results in their percentages of recovery. Neither can truthfully state that they have a proved scientific basis for their reasoning, since that basis would rest on knowing the exact role of oxygen.

Nevertheless, the curtailed use of oxygen has resulted statistically in reducing retrolental fibroplasia to the point where the heretofore described forms of it are rather seldom seen. Some have even optimistically stated that retrolental fibroplasia is a conquered disease, and that since we now know that excess oxygen is the cause there is little excuse for a case occurring these days.

This attitude is a little optimistic. Consider that if oxygen is really the cause of this condition, wouldn't the change from 50 per cent to 90 per cent blood level be a sufficient insult to produce this oversaturation of oxygen without having to give any extra? It has been our experience that this is the case. While the reduction of oxygen in the incubator has resulted in a dramatic decrease in the severe forms of this disease, we nevertheless see beginning signs of retrolental fibroplasia in up to 50 per cent of infants born weighing less than three pounds. These slight signs almost always disappear

after a few months, leaving what we believe to be normal eyes. We have been so sure of the ultimate disappearance of these signs that I have seldom alarmed the parents about their ever having existed.

Recheck of Prematures

A recent study undertaken at the University of Colorado by the department of pediatrics with the consultation of other departments has rather shaken this attitude. This study comprised a recheck of the graduates of their premature nursery at 10 years of age. We now have the first three years fairly well completed. During the period of July 1, 1947 to July 1, 1950 94 infants of birthweight 1,500 grams or less (three pounds 5 ounces) were discharged alive from the premature nursery. To date 54 of these have had thorough reevaluation. Of these only 24 are without an eye defect of some kind. Of the 30 with eye defects 14 have retrolental fibroplasia in some form; 14 others have either strabismus or myopia or both. One other has a macular degeneration; one has vision limited to 20/50 on no known basis. Two of the myopic cases have had retinal detachments secondary to trauma. The cases of retrolental fibroplasia were recognized during the early months of life; the others were not recognized until a later age.

We would have predicted an incidence of ocular defects in this group of 24 per cent, which is high enough, but it turns out we actually have an incidence of 55 per cent. I must add that during this period we were not doing critical fundus examinations in the nursery, so it is impossible to say which of these children who subsequently turned out to have ocular defects other than classical retrolental fibroplasia actually had retrolental fibroplasia which apparently regressed to normal; or which of the cases that now have normal eyes had any signs of early retrolental. Following July 1950 we began routine critical fundus examinations on all hospitalized prematures. It is hoped that this question can be answered by our future reexaminations of children born after this date.

In conclusion, we are left with the possibility that while retrolental fibroplasia may be a rare disease as we now know it, there is a definite possibility that there is some connection between early retrolental fibroplasia regressing to "normal" and the later development of other eye defects.

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Revitalizing and Expanding Services for the Partially Seeing

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A director of special education outlines a plan for finding children with visual handicaps and improving their educational opportunities.*

IN THE fall of 1953 four children were enrolled in the Champaign special class for the partially seeing. Some consideration was being given to discontinuing the class because of the small number of pupils who needed the service. The per capita cost of educating them was so high that it was only logical for a school board to be concerned. Then the question was raised: "Do we have only four children who need this service, or are there others who are not being identified?"

Since Champaign serves as a center and admits partially seeing children from other school systems when daily transportation is feasible, it was not logical to conclude in 1953 that there were only four among a school population greater than 10,000. A director of special education was appointed that fall. The low enrolment in this program was one of the first problems presented to her by the superintendent and the teacher of partially seeing children. The director and special teacher discussed the situation at length and outlined a plan of action which they hoped would result in improved identification and placement of the visually handicapped. The plan sought to achieve better interpretation to regular classroom teachers, helping them to gain an understanding of the characteristics of partially seeing children, their special needs, and the program available to them. It also involved interpretation to the medical profession, to parents, and to the general public.

Program Acceptance

The special teacher and director recognized that various procedures and media must be used to achieve these goals. It was not enough to identify the children; it was also important to develop an understanding and acceptance of the program so that the children might not only be properly placed, but educated in line with their individual needs.

The activities engaged in during the 1953–1954 school year included a series of teas in the special class to which regular educators in the vicinity were invited. On these occasions the special teacher had an opportunity to discuss informally the program for the partially seeing. The regular teachers examined the special materials and equipment, and were informed as to symptoms to look for which might in-

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, Denver, Colorado; March 31, 1960.

dicate eye trouble in children. It was interesting to learn that though many of the teachers had been employed in the vicinity for a number of years this was their first visit to the special class. Almost immediately following these teas referrals of possible candidates for the program were made to the director.

Letters were sent by the director to all eye specialists, pediatricians and general medical doctors in the community informing them as to the nature of the program, and the eligibility of children with impaired vision. Later conferences were held in the offices of the physicians. Special effort was made to see those new in the community. These personal contacts seemed to bring about good results.

Informing the Community

During American Education Week the eye specialists were invited to visit the special class, and some of them were able to do so. Through the efforts of principals and parent-teacher association presidents the special teacher was asked to discuss her program before PTA and child study groups on several occasions during the school year. It was evident at some of these meetings that there was not a clear understanding of the services offered. Some parents, for example, thought all special classes were for the mentally retarded. Others were unaware that children in the program were integrated with regular pupils for part of each day.

The local newspapers were encouraged to publish illustrated feature articles on the program. Permission was obtained from parents to have pictures made of the children engaged in learning activities.

The director and special teacher discussed with the regular teachers children with symptoms that might indicate visual impairment. If these seemed to warrant referral to a specialist, the teacher and/or principal were advised to have a parent conference, explaining the reason for the referral. The director followed up each case by sending to the doctor a form on which he might report his findings.

Parent Understanding

When a partially seeing child was identified, and the oculist's report obtained, the parent was contacted by the director. She discussed the educational program and invited the parent to visit the school before making a decision as to enrolment. It is felt that a thorough understanding of the program is imperative in order to get full parent cooperation, and admission is made only with parent consent.

A thorough interpretation of the characteristics of the partially seeing child and his educational needs was made to social workers, speech correctionists and psychologists on the school staff. This approach is very important since a partially seeing child who is not making a good school adjustment may well be referred for another service.

During the year several letters were sent to eye specialists reminding them of the services available to partially seeing children and bringing them up to date on the progress being made in locating candidates. When the class reached an enrolment of ten, for example, the doctors were told that there was room for four more children. Since doctors are so busy it was felt that they might overlook referring children even though they were aware of such services. A note from time to

time seemed to keep them alert to the school program.

Increase in Enrolment

During the course of that year the class was filled to capacity with partially seeing children who had been previously unidentified in the schools. However, this did not mean that the director and the special teacher could sit back, feeling their job was done. On the contrary, they have been constantly thinking of ways to improve the program. Additional methods of keeping school personnel and general public alerted include: supplying schools with good articles relative to programs for the partially seeing, also films on care of the eyes; participating in television programs; and preparing exhibits. The last two years the Champaign schools have had an Educational Fair which is open to the public. Teachers are present at each of the exhibits to discuss with the patrons of the schools any phase of the educational program. This provides an opportunity to answer questions and to make the public aware of how the needs of these visually handicapped children are met in a school setting.

Last year a sound film was made on all services rendered to exceptional children in the Champaign schools. This is being used by the PTA and other groups in the community.

The radio, newspapers, school newsletter to parents, discussions in teachers' meetings, and individual contacts are continuously utilized to bring about a better understanding of the program.

Volunteer Service

A number of local groups have volunteered their services in our program. Some women have served as teacher assistants, doing routine work in the classroom, which frees the teacher to give more individual attention to pupils. Others have reproduced materials in large print and made tape recordings. Since it is impossible for teachers to reproduce all the needed materials in large print and since many needed items cannot be purchased commercially, this volunteer aid has been invaluable. Perhaps the greatest service rendered by these women is the interpretation of the program to the community.

A great deal of the special equipment we use has been made possible by contributions from service groups. When such organizations give financial support they also indicate an acceptance and understanding of the program which they in turn can transmit to others. This backing and interpretation are very helpful.

This year one of a series of workshops dealing with the various areas of special education was devoted to the program for the partially seeing.

Coordinated Plan

A coordinator has been placed in charge of our vision and hearing screening programs. With the help of the school health council, and an advisory board made up of school personnel and eye specialists, it is hoped that we will be able to do a better job of identifying children with vision impairments, with proper follow-up and placement.

Parents seem more readily to agree to placement in the program for the partially seeing when their children are enrolled in regular classes and go to the resource room for special help. Normality is stressed in this organiza-

tional plan rather than exceptionality. In our school system the change was made from the special class to the resource room three years ago. Regular teachers seem to prefer this plan also.

Currently Champaign has a resource room at the elementary level and itinerant service at the secondary level. It is hoped that in the near future, when space is available, there will be two elementary resource rooms.

In summary, revitalizing and expanding educational facilities for the partially seeing involves a continuous program of interpretation to the school personnel, to parents and community. In 1953 Champaign could have said: "We do not need a program for the partially seeing because we do not have a large enough number of children to warrant it." The truth is that these children are everywhere in our school population. It is up to us to devise ways and means of identifying them and providing them with adequate educational facilities.

Speech Characteristics of the Visually Handicapped

Teachers in schools for the blind in the London area recently had a discussion as to whether children with defective vision also possess any special characteristics of speech which can be attributed to their visual handicap, reports *The New Beacon.*

Dr. Arthur A. Eisenstadt, a speech therapist who has made a detailed study of this question, commented on research he has conducted in the United States. He selected a working group of about 40 children with defective vision; some congenitally blind, some who had lost their sight during childhood and therefore had visual memories, and some with partial sight. A similar number of fully sighted children of comparable background were selected and both groups were subjected to identical tests to bring out voice, diction and self-projection.

Dr. Eisenstadt's main conclusions were: Visually handicapped children do not differ significantly from their sighted counterparts so far as overall effectiveness of speech is concerned; the congenitally blind differ least and the partially sighted differ most from sighted children; those who were once fully sighted show the greatest resemblance to sighted children as far as the visible elements of speech are concerned; visually handicapped children often possess a "broadcast voice" (they do not vary its volume according to distance from the person to whom they are speaking).

Many teachers seemed surprised with the results of the study and wondered whether they would have been the same if the tests had been conducted in England. The lives of the blind and partially-sighted children Dr. Eisenstadt tested were far more closely integrated with those of sighted children than would be the case in England where visually handicapped children are more isolated.

CORRECTION

A correction should be noted in the brief report of the NSPB Texas Committee that appeared on pages 43–44 of the Spring *Sight-Saving Review.*

Mrs. Rob Roy MacGregor is the chairman of the San Antonio Branch Committee, and Mrs. Wellington W. Somerville is chairman of the El Paso Branch Committee. Harold R. DeMoss is serving as treasurer of the northern Texas division of the State Committee.

Eye Safety Education in the Massillon Public Schools

L. J. SMITH
Superintendent of Schools
Massillon, Ohio

Industrial workers of tomorrow are learning good safety habits in the school shops of this Ohio city.*

A FEW days ago a vocational student at Massillon's Washington High School went to his instructor with his safety glasses in his hand. "Look," he said, "see the dents? Boy, am I glad those dents aren't in my eye!"

This incident alone (though we can cite many others) is clear justification for the eye safety program which was launched last September in our school system. It affects almost 600 students —120 in the vocational department, 350 in industrial arts, and 130 in the chemistry laboratory.

A new addition to our high school includes four vocational shops and a general metals industrial arts shop. Since all have the most up-to-date facilities and equipment it seemed fitting that the inauguration of our eye protection program should coincide with their opening.

All boys in automotive repair, automotive collision, welding, machine shop and general metals are now equipped with individual safety glasses which they wear at all times "on the job." The glasses are of the type recommended by the American Society of Safety Engineers and are designed to meet the American Standards Association safety code. They are purchased by the students themselves for less than $3.00 a pair.

No Exceptions To Rule

On the door leading to each of these five shops a sign warns, "Do not enter unless you are wearing safety glasses." This rule applies to instructors, students and visitors. Instructors wear the glasses (also self-purchased) constantly. Students wear them during their three hours of in-the-shop training each day. Visitors entering a shop are supplied with safety glasses and requested to wear them as long as they remain there. Safety regulations are posted in each area, and instructors are diligent about enforcing them. Cleaning stations for the glasses, provided by the Massillon Lions Club, are part of the facilities of each shop.

Students in the high school woodworking shops and in all three junior high schools will also soon have 100 per cent eye protection of the same type. At present they wear cover goggles and face shields on jobs considered by their instructors to warrant such precautions.

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, Denver, Colorado, March 31, 1960.

Boston University
School of Education
Library

For the chemistry department safety face shields and an eyewash fountain are now on order. Face shields rather than safety glasses will be worn in the laboratory in order to protect not only the eyes but the entire face from the possible hazards of splashing acids or broken glass. The eyewash fountain provides immediate first aid in the event of chemical injury.

It is interesting to note that eye protection has gone beyond the classroom situation in our school system. Encouraged by Louis Young, assistant superintendent in charge of business affairs, maintenance men who work with plumbing and electrical equipment now wear safety glasses.

Program Impetus

The launching of this program indicates how cooperation between the schools, local industries and civic organizations can produce good results. At Washington High we are sincerely grateful to everyone who has contributed to the project. Those principally concerned were James E.O'Neil, director of industrial service, National Society for the Prevention of Blindness, who introduced the idea in Stark County, Ohio, and later gave us the encouragement we needed to carry it through; George M. Johnson, safety director of Diebold, Inc., Canton, and eyesight chairman of the Avondale Lions Club; M. C. Saurer, president of the Massillon Lions Club and auto mechanics instructor at the high school; Russell Gardner, vocational director, who put the plan into operation; the Massillon Board of Education whose support has been wholehearted; the advisory board of twenty-one local civic and industrial leaders who helped us work out details; and, of course, the assistant superintendents, principals, instructors, parents and students on whose cooperation ultimate success has depended.

Seven Objectives

For many years our local Lions Club has been interested in the eyesight of boys and girls and has provided hundreds of pairs of glasses for students who needed them. Now the club has broadened this effort and established an eye conservation and safety education project with the following definite objectives:

1. Survey schools in the district to determine whether adequate individual eye protection is used in shops and laboratories.
2. Promote and encourage educational programs in their areas to inform everyone concerning the importance of eye protection in these classes.
3. Work with school officials to see that necessary protective eyewear is available for each student.
4. Assist when necessary in obtaining this equipment, particularly when prescription glasses are needed and when students need financial assistance.
5. Work with school officials and PTA groups to obtain full cooperation of all teachers in shop or laboratory situations.
6. Sponsor or promote legislation, if necessary, to accomplish the goal.
7. Include in their program this objective: "To keep from loss or injury all the eyes of students in the shops and laboratories of our schools."

After consulting our vocational instructors we further enlarged upon the

Lions Club project to include all safety factors. This met with the wholehearted approval of the Board of Education.

Cooperating Groups

Included among the groups giving us technical advice and assistance were the American Society of Safety Engineers, local Fire Department, Ohio Industrial Commission, State Vocational Education Department, the Lions Club Eyesight Committee; also electrical, welding and petroleum engineers and representative tradesmen. These authorities are still functioning as the Massillon Safety Education Advisory Committee. A large number of their recommendations are already in effect. In addition to 100 per cent eye protection, such measures have been adopted as the installation of guards on machines and the use of toe boards to prevent materials from falling from platforms.

Evidence of the importance placed upon safety education today is shown by the series of President's Conferences on Occupational Safety. Seven have been held in the last eleven years. The first, held in 1949, recommended for schools "regular and frequent shop inspections" and "standard forms for reporting accidents." The plans were good, but actually nothing much was done. However, new impetus was given by the conference of 1960. Of the 76 persons in attendance at that meeting one-half were educators; and in all there were representatives from 21 states and 42 agencies. Their recommendations were: first, "that the school and the occupational world join forces to step up the school's contribution to occupational safety"; and, second, "that a permanent staff member in the Office of Education devote full time to safety education."

The American Society of Safety Engineers, meeting in Chicago in 1959, approved a recommendation encouraging its 70 chapters to work with schools concerning safety.

Progress Noted

In evaluating our complete safety program in Massillon after its first months of operation I note that there has been no serious accident since its inception. Instructors report an increased safety consciousness on the part of students; and representatives of industry have expressed an appreciation of the future benefit to industry of the safety practices we are advocating and enforcing.

COSTLY LAB ACCIDENTS

A suit asking $600,000 in damages has been filed by the father of a New Jersey boy who lost the sight of his right eye and suffered facial injuries in a high school laboratory accident. He was cleaning a test tube when it exploded. The suit is reported to be against the South Plainfield Board of Education and a general science teacher.

In a similar case reported from Los Angeles a 17-year-old high school senior suffered serious damage to both eyes.

Adequate eye and face protection would have averted both these tragedies.

TEACHING OPPORTUNITIES

Positions for teachers of partially seeing and other special services are open in Macomb County, Michigan. Inquiries may be directed to Dr. John S. Haitema, director of special education, Macomb County Board of Education, 4th Floor, County Building, Mount Clemens.

OLIVE S. PECK RETIRES

Olive S. Peck, a pioneer in the field of education of the partially seeing, has retired as directing supervisor of special education in the Cleveland Public Schools. Miss Peck, who received her Master's degree from Western Reserve University, began her distinguished career in 1922 when she was assigned to the Sight-Saving Department of the Cleveland Board of Education. She worked closely with the late Winifred Hathaway, associate director of the National Society, and in 1926 went to England as a delegate of the Society to make a study of myope classes.

Miss Peck served for 16 years as supervisor of sight-saving classes for the Ohio State Department of Education, and was assistant supervisor in Cleveland during this period. She later was given supervisory responsibilities for sight-saving, Braille and mentally retarded classes in Cleveland.

She was a member of the 1930 White House Conference, and participated in one of the annual meetings of the American Medical Association, a distinction few laymen can claim. She instituted the first achievement testing of children with defective vision.

Miss Peck taught many summer school training sessions for teachers of the partially seeing, and gave outstanding service to various committees and agencies in the field of education. She contributed to important research on size and legibility of type for use in special classes.

She served as a member of a committee which was instrumental in forming the Ohio Committee of the National Society, and for many years has been a member of the Board of Editors of *Sight-Saving Review*. She now lives in Arlington, Virginia.

A grant in support of Pittsburgh University's basic course of preparation for teachers and supervisors of partially seeing children has been made by the National Society. It was presented by Dr. John W. Ferree, NSPB executive director, at a luncheon in Pittsburgh on March 3, to Dr. Paul H. Masoner, dean of the School of Education.

From left around the table are: Edith Cohoe, supervisor, classes for partially seeing, Detroit Public Schools; Dr. Ferree; Mrs. Dorothy Bryan, assistant to the director, division of special education, Illinois Department of Public Instruction. Representing the University, Dr. L. Leon Reid, coordinator, rehabilitation division, School of Education; Dr. Albert C. Van Dusen, vice-chancellor of professions; Dr. Jack W. Birch, chairman, department of special education; Dr. Masoner; Mercia J. Franciuk, graduate fellow in special education; Olive S. Peck, consultant in research program. Front, right, Thomas L. McFarland, editor, Stanwix House, publishers.

Named Teacher of the Year for the Partially Seeing

AT THE NSPB Annual Conference luncheon, held March 30 in Denver, the first Winifred Hathaway Award was presented, honoring a teacher who is considered to be outstanding in her work with children who have visual problems.

Florence Donermeyer of Longfellow School, Oak Park, Illinois was the recipient of the 1959 award as Teacher of the Year for Partially Seeing Children. She has taught in the Oak Park public school system for 17 years, 15 of which have been in special education.

Miss Donermeyer received her B.E. degree from Central State Teachers College, Wisconsin and her M.A. from Northwestern University. In addition she has done much graduate work at various United States universities and enriched her background through travel in Europe and Central America. Her professional contributions include sharing in responsible offices of such organizations as the Council for Exceptional Children and the Department of Classroom Teachers, NEA.

Realizing the need to be proficient in other areas of exceptionality, Miss Donermeyer has prepared herself in and taught programs adapted to the mentally handicapped as well as the gifted. She has been active in the summer remedial work programs of her school system, and has participated in the teacher training program at Illinois State Normal University.

Miss Donermeyer was particularly recommended for this award because of her flexibility and ability to work

FLORENCE DONERMEYER

congenially with other school personnel in providing the best climate for learning for children in special education. Fellow workers, administrators and parents have been high in their praise of her unsparing efforts. In addition, she has used every opportunity to help young teachers through counseling with them and providing them with resource materials.

Although most of her work has been confined to the elementary grades, Miss Donermeyer has been thoughtful of those children leaving her program to go into the secondary schools by planning with the next-level teachers educational and vocational guidance.

A parent of one of her former pupils has said: "Miss Donermeyer's qualifications . . . include a real dedication to her profession—a deep human understanding of each student with whom

she works and a love for those children who are lucky enough to have her as their teacher. She always looks for and finds the good qualities in each youngster and on them she builds the foundation for self confidence. This does not mean that she overlooks weaknesses. Indeed, she is always aware of what needs to be strengthened but the building is done on a positive scale."

On receiving the Winifred Hathaway Award Miss Donermeyer expressed the feeling that it was not one of personal recognition but a singular mark of respect and appreciation for the work being done by all the teachers engaged in educating the partially seeing. She accepted the honor in this spirit and as a member of a group of which she is indeed proud.

"I am confident," she said, "that this new honor which has come to us in special education in Illinois will not prompt us to rest upon our laurels, but rather that it will cause us to realize that it represents a renewed challenge to dedicate ourselves even more unselfishly to the advancement of the work for which the Winifred Hathaway Award has been established. Those of us who had the great pleasure of knowing Winifred Hathaway personally are fully aware that this is the greatest memorial which could have been established in her memory."

Three finalists were chosen from 30 state nominees for the 1959 award: Mrs. Aime L. Dennison of Nashville, Tennessee; Lorraine Galisdorfer of Kenmore, New York; and Miss Donermeyer who was named for the honor.

The award of $250 and a certificate of honor will be made each year at the National Society's Conference.

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NOTES AND COMMENT

• Kansas City Tests Drivers

In recent months drivers in the greater Kansas City area have been doing a double-take when they meet a bus which reads "Destination: Safe Driving." This is the Drive-O-Rater, a mobile test lab completely outfitted with visual and psychometric devices that helps drivers evaluate the road worthiness of their eyes. It travels to every part of the city.

As reported in the *Journal of the American Optometric Association*, this project was started three years ago when the traffic and safety bureau of the Police Department requested the Kansas City Optometric Society's assistance in vision screening all officers. Police Chief Bernard C. Brannon was aware that some of the accidents to cars and motorcycles were occurring because his officers had vision problems. A police sergeant was assigned to head the screening program and taught to take visual skills, using instruments donated by the optometric society and a local laboratory.

The juvenile court referred all of its traffic violators for screening. Before this became too great a burden on the Police Department, it was noted that a great number of the youngsters arrested for moving traffic violations were visually unqualified to drive. All violators under the age of 17 are referred to the court's traffic workshop to attend a series of five lectures on traffic safety. At the conclusion of the course they receive a certificate showing satisfactory completion of all assignments, and no record of the original infraction is on their licenses.

In 1958 the Kansas City Women's Chamber of Commerce set up a booth at the local auto show, where 10,000 persons had their vision checked. The success of the program led to the Drive-O-Rater bus which was donated by the Kansas City Public Service Company.

• Eye Care in Louisiana

The program carried on by the Bureau for the Blind and Sight Conservation of the Louisiana Welfare Department is constantly being evaluated and revised to keep pace with advances in science and education and with the development of optical aids and instruments for screening. In a recent issue of *Louisiana Welfare* devoted to the services provided by the Bureau, Mrs. Virginia T. Clark, sight conservation consultant, states that the program promotes public awareness of efficient eye care through education in the causes and prevention of visual handicaps and initiates sound projects in good eye care. To realize this objective it is primarily geared to in-service and pre-service training of teachers and nurses.

Dr. Joseph Rumage, ophthalmologist and staff member of Tulane University School of Medicine, and of the Eye, Ear, Nose and Throat Hospital in New Orleans, and Robert J. Francioni, visual aids counselor with the Bureau, give an inside glimpse of one of the newest services now available to the visually handicapped. The Welfare Department through the Bureau operates an optical aids clinic at the hospital. In its first eight months

of operation the clinic was able to provide improved vision for 75 legally blind persons by means of magnifying lenses and other aids. The authors visualize the extension of these services to assist school and even preschool children so that they can benefit from the regular school curriculum.

The growing services in eye care provided through the years are reviewed by Evalena Ford, medical social consultant for eye services. Through Louisiana's comprehensive program, she reports, every citizen is assured necessary eye care whether or not he can pay for it.

• Butler County Screening

The Butler County Branch, Pennsylvania Association for the Blind has conducted its fourth annual preschool vision screening program in close cooperation with school officials, nurses, PTA members and eye specialists.

Eighty-eight per cent or 2,403 of the 2,743 children scheduled to enter first grade in 1959 received a vision check. Of these 351 (one out of seven) were referred to an eye specialist for further examination. One hundred seventy-seven children were found to be in need of glasses; surgery was recommended for two; and some other form of eye care for approximately 126. There was no response from the parents in approximately 53, or 15 per cent of the cases.

A detailed analysis of the screening results has been sent to all school nurses in order that the children may receive further follow-up and individual attention where visual problems exist. James M. Thomas, executive director of the county branch, expresses the belief that the over-all success of such a program can be measured only in terms of the number of children who are actually benefiting from the recommendations resulting from professional eye care.

• Cleveland Clinic

An eye-screening and low-vision clinic was opened last July by the Cleveland Society for the Blind through a grant from the Federal Office of Vocational Rehabilitation. The clinic provides specialized fitting and individual instruction in the use of visual aids to blind persons who have some remaining vision.

The society's *Annual Report* states that 36 persons had benefited from the fitting of near and/or distance vision aids by the end of the year.

• Glaucoma Group Formed

The Halo Circle, a new organization of glaucoma patients, recently held its first meeting at the Eye and Ear Infirmary, Newark, New Jersey reports *United Hospitals News*. About 100 persons attended. Brief talks on glaucoma, its treatment, and available facilities for such treatment were given by members of the Eye and Ear glaucoma committee.

The club, the first of its kind in New Jersey, will meet quarterly to provide education and information for the patients, and to establish a social and medical center for them.

• Los Angeles School Program

Physical examinations given elementary school, high school and junior college students in the Los Angeles City school districts detected 274,687 conditions requiring attention. Of these 34,331 were eye disorders. According to the 1958–1959 *Annual Report* of the *Health Education and Health Services*

Branch, 30,008 cases were defective vision and 4,323 diseases of the eyes.

Medical specialists from the city schools' health branch worked in the eye unit in a consultant capacity, examining pupils for placement in special schools for the blind or classes for the partially seeing. All children with less than 20/40 vision were rechecked. Through the PTA clinic facilities the physicians also performed refractions and prescribed glasses for needy children. Special attention was given to the eye examination of children having reading difficulties or whose educational progress was not up to expectation.

An evaluation of the present method of vision screening is being conducted through the 1959–1960 school year.

• Alabama Lions

The Alabama Sight Conservation Association was organized in 1943 by a local Lions Club to conserve and restore the vision of indigent persons in the Jefferson County area. The following year it became a statewide project. According to the association's annual report, it is the only program for all Lions Clubs on a statewide basis that has been endorsed by Lions International, an indication of the growth of this agency and the impact of its work on the members.

Starting with 30 Lions Clubs in 1944, Alabama Sight is now sponsored financially by 180 clubs and has 8,000 members working together to prevent blindness. The local clubs work not only with Alabama Sight, but also with their own local pension and security units, health departments, vocational rehabilitation services, Red Cross chapters; and the schools, parents and citizens who bring to their attention the needs of the visually handicapped.

Alabama Sight offers ophthalmic service for people of all ages. Cooperating ophthalmologists receive no remuneration. A class for partially seeing children in a Birmingham elementary school has been endowed by the organization and it is also currently sponsoring a school vision screening program. An educational campaign relating to eye care is now being directed to the general public.

• Bank for Eye Tissue

An eye tissue bank will be established at the University of Missouri School of Medicine, Columbia, with financial support from the Lions Clubs of Missouri. To be known as the "Lions Eye Tissue Bank of the University of Missouri," it will serve the state and adjacent area.

The *Journal of the American Medical Association* reports that an administrative advisory committee of representatives of the Lions Clubs and of the university will be established. The School of Medicine will direct the operation of the bank in the receipt, processing, and distribution of eye tissue. Dr. John A. Buesseler, associate professor and chief of ophthalmology, will be in charge of training in preservation and transplantation methods.

LARGE-PRINT MAGAZINE

A monthly magazine, chiefly for older teenage and young adult readers who require larger than average print, is HAPPINESS!, published by The Christian Record Benevolent Association, Inc., Box 3666, Lincoln, Nebraska. This large-print periodical contains stories, poetry and items of general interest.

LOSS OF NSPB STAFF MEMBERS

At its meeting on June 2 the Board of Directors of the National Society recorded with sorrow the deaths of two valued and devoted staff members.

Grace Hooper, business manager, died in New York on May 12 after an illness of several weeks. She had joined the Society's staff as accountant in April 1946, and was made business manager in January 1950. In this capacity she was not only in charge of all financial transactions and records but also of office procedures and personnel. The Society's growth and expansion in recent years, with the establishment of state organizations, steadily increased her range of responsibilities. Her talents were equal to the challenge, which she met with technical knowledge, efficiency and graciousness. She was moreover widely known for her warm personal qualities and her unsparing readiness to be of all possible help to those in need.

Hester M. Winston died suddenly at her home in New York on May 15. Since April 1927 when she came to the National Society she had served as secretary to three successive executive directors—Lewis H. Carris, Eleanor Brown Merrill, and Franklin M. Foote, M.D. For the past eight months she held the position of information secretary.

From the beginning Miss Winston was devoted to the interests of the Society. She was endowed with a keen and perceptive mind, a retentive memory, as well as a marked gift of language facility. These qualities, combined with a conspicuous measure of conscientiousness and loyalty, made her an invaluable assistant. Each task was performed with intelligence and thoroughness. Her humanitarian understanding of the troubles of others was reflected in her sympathetic responses to the numerous individuals seeking information and guidance from the Society in regard to their eye problems.

The National Society has sustained a great loss in the deaths of these two staff members who have given so many years of loyal service; and their associates are deeply saddened at the passing of two good friends.

DR. EDGAR B. BURCHELL

Dr. Edgar B. Burchell, a self-educated scientist who could teach and advise physicians, but who held no academic privileges to practice medicine, died in Amityville, L. I. on May 19 at the age of 88.

Without formal education in his field, Dr. Burchell rose from a porter in the New York Eye and Ear Hospital to the post of bacteriologist and serologist there. In 1936 he received an honorary Doctor of Science degree from Roanoke College. It was from this date that he was known as "doctor." In 1944 he was appointed an honorary fellow of the American Academy of Ophthalmology and Otolaryngology.

Dr. Burchell was born in New York, a son of a carpenter. His family was unable to finance a formal education in science for him. At 17 he took the porter's job, which paid $18 a month. By observing, asking questions and studying, he became well versed in several phases of medicine.

His work in the construction of specimens, particularly of the structure of the ear, earned him increasing notice from specialists. He left a li-

brary of 400 temporal bones and more than 100,000 eye sections. Specialists from all over the world have come here to study his work.

Dr. Burchell was greatly interested in the work of the National Society and contributed to one of its recent annual conferences an extensive exhibit on eye pathology. The delegates who listened to his informal lectures on this notable collection of slides were impressed with his great fund of scientific knowledge as well as with his charm and simplicity.

SIMPLE OPTICAL AIDS

In a paper on optical aids for low visual acuities presented at the Academy of Ophthalmology and Otolaryngology, Dr. Gerald Fonda and Dr. Daniel Snydacker emphasized the value of the hand magnifier and the lens with the simple high plus add. Commenting on their opinion of these devices in the *Survey of Ophthalmology* Dr. Arthur Linksz writes:

"I can confirm the authors' every word out of considerable personal experience. I hardly ever prescribe complex or expensive visual aids. Since the blessings of television became widely available I have not prescribed a telescopic lens for an elderly patient. I encourage them to get closer to the screen and use rather harsh words in the argument with the family who insist that sitting too close will further ruin grandpa's eyes. It is amazing how many patients are being told that nothing can be done for them while a careful refraction gives them one or two added Snellen lines for distance and a high plus add enough vision for near. Hand magnifiers too are a blessing."

CONTACT LENSES IN SPORTS

Today contact lenses are being used in all sports. High schools, colleges, and professional athletic organizations are recognizing the necessity of making them available to their players as needed. In many cases funds are provided for this purpose.

R. A. Yarwood reports in the *Journal of the American Optometric Association* that he has reviewed the case records of all of the Denver University basketball players, many of whom wear contact lenses, and other athletes at the professional or college level. No clear-cut formula for prescribing for athletes and sportsmen was found. It was noted, however, that especially thin lenses were used because they stay in place better in body contact sports. The lens diameter did not seem to be a factor. The term "sports lens" refers to a contact lens slightly larger than average. This size reduces loss.

STUDY OF TOY INJURIES

The Florida Pediatric Society has agreed to conduct a survey in cooperation with the National Safety Council and the Florida State Board of Health in an effort to evaluate the problem of toy injuries. Within the scope of the survey is any accident which directly or indirectly involves any object which a child is using for recreation or play purposes. Doctors will be asked to cooperate by reporting cases on simple questionnaires to be sent to the State Board of Health. In order to get variation in the type of accident the study will be conducted during the months of June, October and February.

REPRINT AVAILABLE—"Glaucoma Screening in Connecticut," an article by Grace E. Mills that appeared in *Sight-Saving Review*. Pub. 390; 4 pages; 5 cents.

AROUND THE WORLD

AFRICA

Course in Onchocerciasis. The World Health Organization in Geneva has recently published in mimeographed form a report on the training course on the ophthalmological aspects of this disease, organized by the regional office for Africa and held at the Institute of Tropical Ophthalmology in Bamako. Tropical Africa and tropical America are endemic zones where the disease affects millions of persons and causes blindness in tens of thousands of cases. Transmitted from man to man by the black fly, it is responsible for blinding two out of every three sightless persons in Bamako.

A series of meetings was attended by specialists interested in the study of the different problems connected with onchocerciasis. The subject was introduced with an historical survey of the disease by Dr. R. R. d'Haussy, WHO consultant and course director.

Gambia Project. The 480 inhabitants of the village of Marakissa in Gambia are the subjects of a trachoma survey being conducted by the British Medical Research Council's Trachoma Research Group. Using the chick embryo method, the group is studying the correlation between clinical, virological and bacteriological findings in the subjects. It is hoped to gain further information about the role of these viruses in the trachoma syndrome, their relation to the finding of inclusion bodies in the conjunctiva, and the influence of bacterial infections.

The investigating team located at Fajara consists of an ophthalmologist, two virologists, a bacteriologist and a senior technician, to whom are attached an African staff of laboratory orderlies and drivers. The team maintains close contact with its parent unit at the Lister Institute in London where more fundamental studies of the viruses isolated in the Gambia are undertaken.

FRANCE

World Safety Congress. The Third World Congress on the Prevention of Occupational Risks is now being organized by the National Safety Institute of France. The Congress will be held in Paris, May 22–27, 1961.

Cooperating organizations are the International Social Security Association and the International Labour Office. Among the participants will be representatives of governments, public and private institutions, industry, business, and professional groups.

The official languages will be French, English, Spanish and German. Registration fee NF 50 (new francs).

Inquiries should be addressed to the Institut National de Sécurité, 9 Avenue Montaigne, Paris 8, France.

GREAT BRITAIN

Problems of the Partially Seeing. During the first part of the century children with poor sight were educated with the blind; but today attention is given to maximum use of residual vision. Special schools are provided for the partially seeing; and some are educated in regular schools. However, their problems are still not fully understood, and in some ways they are greater than those of the registered

blind. The schools do not provide vocational guidance, training and placement in industry. Mr. Tom Drake, principal of Manor House at the Queen Elizabeth Homes of Recovery, a rehabilitation center for the blind in Torquay, spotlights this problem in *The New Beacon*.

There are no rehabilitation centers for the partially seeing in England. As a result, some who are unable to succeed or advance in their particular work because of their handicap are referred for blind rehabilitation and employment. The Manor House has been flexible in dealing with such people. It has included sighted occupations that would stretch their capacity and yet be within the range of their visual limitations.

Mr. Drake suggests that a center be made available for partially seeing students and adults where they can undergo a course of adjustment, assessment and vocational guidance followed by special placing.

SOVIET UNION

Education of the Visually Handicapped. A study of special education in the Soviet Union by John W. Tenny, professor and general adviser of special education, Wayne State University, is reported in *Exceptional Children* for February. It is based on the author's tour of the country in the summer of 1958.

Schools for the blind and for the partially seeing in the Soviet Union are separate and segregated as are all facilities for exceptional children. There are 50 schools for the blind, at least one in each Republic, and 6,000 blind children are known to clinics, but it was suggested to the author that the census was incomplete. Injury from the explosion of field mines left after the war and other accidents were given as major causes of blindness. Retrolental fibroplasia, although known, is not very prevalent. Because of a decrease in incidence of blindness the schools for the blind are admitting partially seeing children. The school for the partially seeing in Moscow accommodates 315 pupils, of whom 215 are in residence. Eleven years are allowed for completion of the 10-year school program as in schools for the blind. Ophthalmologists are on the full-time staffs of the schools. Vision testing charts comparable to the Snellen are used.

PUPILLARY MEMBRANE IN PREMATURES

During the last three years the eyes of 270 prematurely born infants have been examined at Lewisham Hospital, London, reports B. Gans in *Archives of the Diseases of Childhood* (London) for August 1959. He found that the presence of a pupillary membrane, particularly if it is extensive, is a good, though nonspecific, sign of immaturity. An easily seen membrane was present in the majority of immature babies and almost always in those weighing less than 3 lbs. 5 oz. The number and size of the vessels closely paralleled the degree of immaturity. The rate of vascular obliteration and disappearance of the membrane closely followed the infant's general progress. Most infants were discharged from the unit for premature babies when they weighed 6 lbs., and in none of those discharged was a persistent pupillary membrane found.

REPRINT AVAILABLE

The article "Gaps in Fireworks Control" by Helen Augur that appeared in *Sight-Saving Review*, Spring 1959, may be secured from NSPB. Pub. No. 175; 5 cents.

CURRENT ARTICLES

The Effect of BC-48 (Demecarium Bromide) on Normal Rabbit and Human Eyes. N. Krishna and I. H. Leopold. *American Journal of Ophthalmology*, Vol. 49, p. 270. February 1960.

BC-48 is a new synthetic, powerful, longacting cholinesterase inhibitor. Because of its ready solubility in water and its stability for indefinite periods, it promised to be a useful anticholinesterase agent in control of glaucoma. This investigation was undertaken to determine its effect on normal rabbit and human eyes.

The initial study showed that applied locally BC-48 caused no permanent damage to rabbit eyes. It was then instilled on the corneas of 20 human volunteers ranging in age from 18 to 70. Atropine sulfate and homatropine hydrobromide were employed to induce cycloplegia and to evaluate the counter effects on BC-48. Single instillations of the inhibitor produced miosis in all 40 eyes. It lowered the intraocular pressure by 3.0 mm. Hg or more, and in two eyes more than 11 mm. Hg three hours after instillation. In all eyes there was a significant increase in the coefficient of aqueous outflow facility 24 hours after instillation. BC-48 also produced blurred vision, browache, false myopia and increase in capacity for accommodation. It abolishes the action of atropine and homatropine. Both superficial and deep congestion was noted in nearly all eyes. Two patients complained of nausea.

BC-48 possesses powerful muscarinic and some nicotinic properties, and resembles neostigmine in action. Because of its increased permeability across blood-brain barrier and its anticholinesterase effect, it could be toxic.

Demecarium Bromide and Echothiophate Iodide in Chronic Glaucoma. B. Becker and T. Gage. *A.M.A. Archives of Ophthalmology*. Vol. 63, p. 102. January 1960.

An evaluation was made of demecarium bromide and echothiophate iodide in a series of patients with glaucoma uncontrolled on other forms of therapy. The results confirm the findings of previous investigators that these agents are remarkably effective in lowering intraocular pressure and improving outflow facility in both normal and glaucomatous eyes.

Demecarium bromide therapy was initiated in 144 eyes of 76 patients and echothiophate iodide was started in 155 eyes of 83 patients. Chronic simple glaucoma predominated in both series with a small number of secondary and postoperative (iridectomy) angle-closure glaucomas. Applanation tonometry and tonography were carried out on all patients before the onset of therapy and at intervals of three to six weeks throughout the follow-up period. Patients who discontinued therapy were classified as failures along with those who were not successfully controlled.

An intraocular pressure of less than 20 mm. Hg was obtained in over half of previously uncontrolled glaucomatous eyes by the use of 0.25 per cent of either of these agents. In approximately 30 per cent of these eyes this control was maintained at all measurements for periods of over six months.

Approximately 50 echothiophate iodide failures were treated with demecarium bromide and vice versa. In both series about one-fourth of the eyes that failed to be controlled with one of the drugs were controlled with the other.

Although rare, the systemic side effects of these drugs must be appreciated. Failure to recognize the systemic anticholinesterase effects of such medications applied topically to the eye resulted in unnecessary extensive medical and x-ray studies.

A Comparison of Intraocular Pressure Reduction Following Urea and Sucrose Administration. M. A. Galin, F. Aizawa and J. M. McLean. *A.M.A. Archives of Ophthalmology*, Vol. 63, p. 281. February 1960.

A comparative study was made of the effects of intravenously administered urea and sucrose as osmotic ocular hypotensive agents. Blood was obtained for analysis of freezing point depression and urea nitrogen. Tonography was performed, and a 30 per cent solution of lyophilized, ammonia-free urea dissolved in 10 per cent invert sugar was administered. Serial tonographic studies were made, as well as blood samples for comparison with baseline studies. On another occasion baseline blood studies were obtained and a similar study was carried out using a 50 per cent solution of sucrose as the osmotic agent. After each study urine was obtained and tested for the presence of hemoglobin.

Maximum reduction in intraocular pressure occurred approximately 45 minutes after administration of either drug. Maximum hypotension occurred at the time of maximum osmolal change. Intraocular tension reached the pretreatment level in three to five hours with urea and in two to three hours with sucrose. Urinary hemoglobin was not found with the use of either drug.

Sucrose has had moderate use as an osmotic hypotensive agent in glaucoma. Its toxic limitations and large molecular weight make it necessary to administer enormous doses to achieve high osmotic level in the blood. In the commonly used concentrations it is a poor drug. On the other hand, urea has proved to be a remarkable osmotic agent. Its low molecular weight, relatively poor ocular penetrance, and inertness make it suitable.

Glaucoma Associated With Steroid Therapy and Atopic Dermatitis. J. L. Harris. *American Journal of Ophthalmology*, Vol. 49, p. 351. February 1960.

The relationship between intraocular pressure and corticosteroid administration is uncertain. Some reports suggest that glaucoma may be induced by prolonged therapy with steroids; some investigators maintain that patients given steroids over a long period of time do not show a tendency to glaucoma.

Present-day treatment of atopic dermatitis has been based largely on systemic and local use of corticosteroids and injection of ACTH. Eye involvement is a prominent feature of this disorder. A most serious complication is a specific type of anterior polar cataract. Keratoconus and keratoconjunctivitis are also frequently found.

A case is cited of a patient who had had atopic dermatitis for 14 years. He had received corticosteroids systemically and locally, and injections of ACTH for seven years. He developed

severe glaucoma, resistant to medical treatment, with an apparent sudden onset. Filtering operations were done on both eyes. The postoperative course was uneventful and characterized by no inflammatory reaction. Since there was no family history of the disease it was reasonable to suspect some connection between his glaucoma, his skin disorder, and possibly his treatment with steroids. In the postoperative period there were two episodes of a rise in intraocular pressure following the use of oral steroid. The use of Aristocort several months after the operation, when both filtering tracts appeared well established, did not cause a rise in tension.

Further studies are needed as to the relationship between intraocular pressure and corticosteroid administration. The possibility that glaucoma is another ocular complication of atopic dermatitis should be considered.

Emotional Glaucoma. M. Croll and L. J. Croll. *American Journal of Ophthalmology*, Vol. 49, p. 297. February 1960.

The role of emotion as a causative factor in acute closed-angle glaucoma is not clearly understood, nor has it been fully evaluated. A great variety of emotional upsets have been reported as producing the disease.

Two basic components are necessary to predispose the patient to an emotional type of glaucoma—a preexisting shallow anterior chamber and a superimposed acute emotional episode. The former is found in about 10 per cent of the population. Studies seem to indicate that it is an inherited characteristic. A shallow anterior chamber may be closed off for a variety of reasons which can be grouped as anatomic, functional, cerebral; or caused by drugs and trauma. Advancing age, progressive continuous growth of the lens through life, pupillary block by a dilated pupil, and swelling of the vitreous are anatomic factors that contribute to the progressive narrowing of the anterior chamber.

The authors review the physiologic factors and the role of the vitreous. They cite three cases of emotional glaucoma. The patients were unstable, emotionally immature, full of deep-seated anxieties and tormented. They belonged in a separate personality group, just as this type of closed-angle glaucoma appears to belong in a group separated from other types of the disease. They had several things in common; their attacks all followed major surgery which precipitated severe emotional upset, and in which the iris was bombarded with incessant sympathetic stimuli plus large amounts of adrenalin which had been poured into its blood stream. When the pupil becomes so dilated, there is a true mechanical block of aqueous drainage and a vicious sudden episode of acute closed-angle glaucoma is initiated.

The term "emotional glaucoma" is open to controversy and time will tell whether this type of acute closed-angle glaucoma can be safely grouped under this clinical entity.

Darkroom Outflow Test in Unilateral Closed-Angle Glaucoma. W. S. Foulds. *British Journal of Ophthalmology*. Vol. 43, p. 697. November 1959.

The darkroom and darkroom outflow tests were used to investigate the second eye of 79 cases of apparently unilateral closed-angle glaucoma. Each patient had either had an acute attack

of glaucoma in one eye or else had been seen in a sub-acute attack with a closed angle and raised ocular tension. Seventeen had symptoms (halos) suggestive of glaucoma in the second eye, while the remaining 62 were symptom-free. All were submitted to a darkroom test for one hour, the ocular tension and facility of aqueous outflow being determined before and after the period in the dark. A positive rise in ocular tension (more than 8 mm. Hg) occurred in 27.8 per cent, whereas a marked decrease in the facility of outflow was found in 57 per cent.

The results of the two tests were correlated with the presence or absence of symptoms. Consideration was given to changes in ocular tension and in the facility of outflow. Definite evidence of closed-angle glaucoma was demonstrated in the second eye of the majority of cases. The author cautions that no reliance should be placed on a negative darkroom test in the diagnosis of closed-angle glaucoma since the test frequently fails to provoke a rise in tension.

The high proportion of positive results lends support to the view that a prophylactic peripheral iridectomy should be performed on the second eye in cases of apparently unilateral closed-angle glaucoma, provided that this eye is anatomically similar to the affected one.

Effect of Demecarium Bromide (BC 48) on Intraocular Pressure in Man. S. M. Drance and F. Carr (technical assistant). *A.M.A. Archives of Ophthalmology*, Vol. 62. p. 673. October 1959.

The present study was designed to assess the effects of a new synthetic powerful cholinesterase-inhibitor, demecarium bromide, on the intraocular pressure in man.

In the normal human eye demecarium bromide produced a very marked fall in intraocular pressure which came on after 12 hours of instillation and persisted for three to five days. Tonographic studies revealed a marked increase in the facility of outflow (C).

Thirty-eight of 40 eyes with chronic simple glaucoma showed a significant and considerable drop in the intraocular pressure after instillation of 0.25 per cent of 0.1 per cent of demecarium bromide. The two eyes which failed to respond were absolute glaucomatous eyes.

Thirty of 34 eyes with chronic simple glaucoma showed a considerable increase in facility of outflow on tonographic study. Three of the four eyes which failed to show any increase in facility of outflow showed a significant fall in intraocular pressure.

The hypotensive action of demecarium bromide was accompanied in the great majority of normal and glaucomatous eyes by intense miosis, some spasm of accommodation, vasodilatation of the conjunctival vessels, ocular discomfort and headache in the brow overlying the treated eye. The unpleasant side effects tended to wear off with continuous use of the drops.

The Effects of Ethoxzolamide (Cardrase) on Intraocular Pressure. S. M. Drance. *A.M.A. Archives of Ophthalmology*, Vol. 62, p. 679. October 1959.

The short-term effect of ethoxzolamide (cardrase) in 52 normal and 36 glaucomatous eyes was studied. The drop in intraocular pressure was greatest where the initial intraocular

pressure was highest prior to the use of the drug.

A single dose of 125 mg. of the drug produced a maximal pressure lowering effect at five hours, and by 12 hours the effects were almost entirely worn off. A single dose of 250 mg. of the drug produced a considerable reduction in pressure starting before two hours, maximal at five hours, but still appreciable after 12 hours.

Tonographic studies in normal eyes suggested that the reduction of intraocular pressure with ethoxzolamide was due to an inhibition of aqueous humor formation.

The side effects in the dosage clinically used were slight. Ethoxzolamide, 125 mg., produced only a mild diuresis and paresthesiae of extremities. One patient complained of light-headedness. Ethoxzolamide, 250 mg., occasionally produced dizziness, headache, anorexia, nausea and paresthesiae, but in a majority of patients it produced no side effects at all or only very slight and transient symptoms. Almost all patients had some diuresis which was transient. These side effects applied only to short-term therapy, that is, single dosage or therapy for two or three days. A subsequent study will report on side effects and metabolic effects of long-term treatment.

Alpha-Chymotrypsin in Cataract Surgery. G. B. Kara. *A.M.A. Archives of Ophthalmology.* Vol. 63, p. 122. January 1960.

This preliminary report summarizes the results of 132 cataracts extracted at the New York Eye and Ear Infirmary using three different preparations of *a*-chymotrypsin—Quimotrase, Alpha Chymar, Zolyse. Types of cataracts included in this series were: congenital (mature and immature), adult (mature and immature), traumatic and complicated (e.g., preexisting uveitis).

The mechanism of the enzyme's action is not yet entirely clear. The author suggests that it does not actually dissolve the suspensory ligament, but merely weakens its tensile strength, and the very maneuvers of lens extraction rupture the already weakened zonular fibers, thus facilitating the procedure and minimizing potential complications.

Chemical zonulysis definitely facilitated intracapsular cataract extraction and minimized potential complications during surgery in this series. However, the author cautions that the use of the enzyme should be selective and restricted as to age of patient (20 to 60 years of age) and nature of the cataract. Certain complications, primarily of the iris and cornea, resulted from strong concentrations of *a*-chymotrypsin.

Zolyse was used to extract the last 32 cataracts. It appears to have the added advantage that its diluent is a balanced salt solution which facilitates extraction while minimizing cytotoxic effect on the intraocular structures.

Chymotrypsin: An Aid To Intracapsular Cataract Extraction. H. E. Thorpe. *Transactions of the American Ophthalmological Society.* Vol. LVII, p. 254. 1959.

This report deals with 77 cataract operations performed in patients between the ages of 18 and 83 with the aid of alpha chymotrypsin for enzymatic zonulysis. Alpha chymotrypsin (ACT) is a proteolytic enzyme extracted from bovine pancreas in the inactive crystalline precursor form of

chymotrypsinogen. It is transformed to the active form by the action of trypsin. Two of its products were used in this series—Alpha Chymar in 75 cases and Quimotrase in two cases. The lens was removed with ease in patients 30 years of age and over who were exposed to the active enzyme for three minutes in a concentration of 1:5,000 or 150 Armour proteolytic activity units per cubic centimeter. The aqueous chamber was irrigated.

ACT facilitated intracapsular cataract extraction and helped to prevent the complications of capsule rupture and undue zonular traction of the structures of the inner eye. It appears to be unnecessary for most patients over 65 years of age. However, in an occasional old patient, particularly one with a tough zonule, there is a definite indication for its use.

The author cites a number of favorable reports from surgeons using this procedure. A few ran into occasional complications and some preferred not to use the material in infants or children with congenital cataract.

Completely Dislocated Hypermature Cataract and Glaucoma. P. A. Chandler. *Transactions of the American Ophthalmological Society.* Vol. LVII, p. 242. 1959.

To the author's knowledge, this is only the second published report of the arrest of lens-induced glaucoma by removing a hypermature cataract from the vitreous chamber. The diagnosis of this condition rests on the presence of cells in the aqueous, a hypermature cataract in the vitreous chamber, and glaucoma which increases in severity until the tension reaches very high levels. Removal of the lens apparently offers the only hope of saving the eye.

The author's patient had increasingly severe glaucoma in the right eye which eventually resisted even maximum medical treatment. At operation, the vitreous was found to be almost completely fluid and the eye more or less collapsed after the 180° section was made. A full iridectomy was done above and an inferior iridotomy almost down to the lower limbus. The corneal flap was lifted and the vitreous chamber irrigated. The lens was attached to the retina by a strand of tissue and during its removal a hole was torn in the retina. No detachment occurred and the hole was sealed by surface diathermy. Subsequently, the lens was easily removed in the left eye by irrigating the vitreous chamber.

Removal of the left lens completely relieved the glaucoma. In the right eye there is a moderate degree of residual glaucoma which can probably be controlled by medical means.

Experience with the Jose Barraquer Method of Extracting A Dislocated Lens. F. P. Calhoun, Jr. and W. S. Hagler. *Transactions of the American Ophthalmological Society.* Vol. LVII, p. 221. 1959.

The literature on the treatment of dislocated lenses and the principal surgical techniques previously described for removing them are reviewed. The management of a patient with a dislocated lens is still an extremely controversial subject. There is no general agreement on the technique once surgical treatment has been decided upon.

The authors therefore investigated the feasibility and safety of a method recently described by Barraquer of trapping and supporting all types of

dislocated lens with a double-pronged needle passed through the pars plana. They tried various types of double-pronged needles in a series of 20 cases in an attempt to find the ideal one. Their technique for using this method in nine cases of luxation into the vitreous and 11 cases of subluxation is described in detail.

The advantages of the double-pronged needle operation, the authors state, make it a procedure of choice in almost all cases in which extraction is indicated. The same technique and needle can be used for operations on the subluxated as well as the luxated lens in all age groups; vitreous loss is greatly reduced in frequency and amount because the needle furnishes excellent scleral support, and the lens is supported in an accessible position in front of the vitreous. An intracapsular extraction is permitted in all cases as opposed to operations in which the lens is deliberately transfixed; and the incidence of serious postoperative complications is said to be less than with other methods.

A modified version of Barraquer's instrument has been used successfully by the authors in several recent cases.

Aseptic Technique in Ophthalmology. H. F. Allen. *Transactions of the American Ophthalmological Society.* Vol. LVII, p. 377. 1959.

This thesis, submitted by the author for membership in the American Ophthalmological Society, stresses the indispensable nature of aseptic technique in ocular surgery, with an emphasis on the etiology, epidemiology, and practical prophylaxis of ocular infections.

Much evidence shows the need for wider understanding of the principles and practices on which aseptic eye surgery must be based. Although the incidence of preventable infection in ophthalmology has been greatly reduced, several major outbreaks and isolated cases of postoperative endophthalmitis and a number of localized epidemics of adenoviral keratoconjunctivitis have occurred in the United States and Canada within the past ten years. Most, if not all, of the surgical infections, and many of the cases of virus infection might have been prevented had stricter precautions been taken.

The author presents a systematic approach to prevention of eye infection and points out the limitations and dangers of other methods. He suggests standards which may serve as a guide to hospitals wishing to strengthen their defenses against infection. He emphasizes that the means are at hand for destroying all forms of microorganisms on inanimate objects and in unoccupied spaces. Under these circumstances there can be no justification for the use of methods which do not achieve absolute sterility of instruments, materials, and solutions.

Long-Term Preservation of Donor Tissue For Corneal Grafting: Correlation of Results From Tissue Cultures With Those From Experimental Graftings. F. W. Stocker, M. T. Matton, A. Eiring, R. Georgiade and N. Georgiade. *Transactions of the American Ophthalmological Society.* Vol. LVII, p. 133. 1959.

These experiments were designed to determine the correlation between the behavior of fresh and preserved corneal tissue in tissue cultures and in experimental grafting procedures. Cor-

neas from cats and rabbits were employed in an effort to determine if a species difference exists.

Corneas were removed and preserved by glycerol freezing at either −45°C. or −79°C. After the preserved cornea had been thawed and rehydrated, the graft was excised. The temperature of −45°C. was found to be preferable to −79°C. in both the results of tissue cultures and those of experimental grafts. The longer the tissue had been stored in a frozen state, the more it was damaged and reduced in its viability. The results in rabbits were much more favorable than those in cats; the endothelium of a rabbit cornea withstands freezing for a long time.

A comparison of the general course of the fresh and frozen grafts indicates that although after a certain length of time satisfactory results may be obtained from corneas frozen and stored at −45°C. and at a much lesser degree from those frozen at −79°C., there is a considerable difference in the behavior. Most successful fresh grafts stay clear, or almost so, from the beginning. In contrast, the successful frozen grafts may be clear initially then go through a period of opacification, and take considerably longer to clear.

Tolerance of the corneal tissue to glycerol freezing may vary from species to species, and caution is necessary in applying animal experiments to humans. From early observation with human corneas it appears that the results approximate those obtained in rabbits.

The authors feel that preservation of the endothelium in a viable state is essential for success, and improvements in the technique of freezing, thawing, and rehydration may lead to a long-term storage method. Corneal tissue preserved at −45°C. may be used in emergencies when no fresh tissue is available, but cannot be recommended as yet for long-term banking as a substitute for fresh tissue.

The Use of Absorbable Sutures in Surgery of the Cornea. S. D. McPherson, Jr. *Transactions of the American Ophthalmological Society.* Vol. LVII, p. 700. 1959.

This thesis examines the historical background and reports on the experimental findings and clinical use of plain and chromic catgut sutures in surgery of the cornea. Forty catgut sutures were biopsied, cultured in fluid thioglycolate media, and found to be sterile. The reaction of ten rabbits' corneas to silk, plain catgut and chromic catgut sutures were evaluated. In 28 days there was little difference in the reaction excited by the three suture materials in clear corneal incisions. Epithelialization of the suture tracks was found to be as common with catgut sutures as with silk.

Plain and chromic catgut sutures were used in the closure of clear corneal lacerations in 26 patients. No postoperative wound separation or poor wound healing occurred. Suture reaction and corneal scarring were not pronounced although subjective ocular irritation was moderate in three patients. Plain and medium chromic catgut were used in the direct suture of two lamellar and nine penetrating keratoplasties. Wound separation of iris prolapse did not occur, and wound healing was considered satisfactory. Corneal scarring and suture reaction were not pronounced.

The disappearance time of plain and chromic catgut sutures from human

corneas was studied and found to vary from five to 38 days for plain catgut and from eight to 64 days for chromic catgut.

The author believes that catgut should appeal to the ophthalmologist in closing corneal wounds because it is composed almost entirely of collagen fibers and, therefore, is the most similar to corneal tissue of any of the available substances. Its absorbable quality offers a distinct advantage over silk.

Chemical Keratectomy. M. Croll and L. J. Croll. *The Eye, Ear, Nose and Throat Monthly*, Vol. 39, p. 162. February 1960.

This report concerns three cases in which several hundred foreign bodies, driven into the cornea with considerable force, were removed without scarring. Many of them were below Bowman's membrane. The removal of each foreign body individually was considered impractical because it would have required three to four hours and would have resulted in a greatly scarred cornea. The additional trauma involved might have proved hazardous to the function of the eye.

To avoid the tremendous amount of instrumentation, two per cent pontocaine (tetracaine) was used for massive corneal insult. Following this it was possible to roll off the upper layers of the cornea in which the foreign bodies were embedded.

The raw corneas were covered with egg membrane and the patients received postoperative treatment with antibiotics. In one eye about 40 foreign bodies were present after the initial operation. At a second operation five particles remained which were subsequently removed with a spud.

Results with this newly devised method have proved highly satisfactory and it undoubtedly has a place in selected patients.

Spiramycin in the Treatment of Trachoma. M. Herbert-Berner. *International Review of Trachoma*. No. 4, p. 373. 1959.

A study was made of 400 trachoma patients treated with I. M. Spiramycin in the district of Tacaratu, Brazil where there is a high incidence of the disease. The antibiotic, administered intramuscularly, produced excellent results. Healing was delayed if there was associated conjunctivitis. Keratitis were healed in 96 hours.

Impaired or Absent Fundus Reflex in Infants and Children. J. Zuckerman. *Archives of Pediatrics*. Vol. 77, p. 14. January 1960.

The pupillary area presents a red fundus reflex when a beam of light from the ophthalmoscope is directed at it from a distance of about 20 inches. When the pediatrician is confronted with an infant or child whose eye (or eyes) reveals an impairment or absence of this reflex, he should direct special attention toward cataract as one of the chief possibilities of obstruction after he has excluded such possible causes as affections of the cornea, abnormal contents of the anterior chamber, and affections of the iris. A partial or complete cataract appears black against a red background when examined ophthalmoscopically because the opacity is then retroilluminated.

After careful examination of the opacity, an attempt should be made to ascertain whether it is unilateral or bilateral, in what part of the lens it is

located, whether it is developmental or acquired, how obstructive, and whether stationary or progressive.

In order to determine the etiology of a cataract in a child knowledge is required of the body in general as well as the condition of the eye proper. The local causes include trauma, X-rays, radium, ultra-violet and infra-red light, and inflammatory or pathologic changes in the iris, ciliary body, choroid, retina and vitreous. Among the general causes are diabetes, faulty diet, endocrine disturbance, dermatologic conditions, and toxemia.

Surgical intervention depends on how much an opacity interferes with vision, whether the opacity is stationary or progressive, the general state of the patient, and whether only one or both eyes are affected. The author advises operation between the ages of three and six months to allow the rods and cones in the retina to develop properly by exposing them to stimulation by light.

Ocular Evaluation of the Cerebral Palsied Child. S. Diamond. *American Journal of Ophthalmology.* Vol. 48, p. 721. December 1959.

A few of the many and varied problems that may arise in cerebral palsy from a visual and oculomotor standpoint are presented by the author, a consultant in ophthalmology, Northern California School for Cerebral Palsied Children, San Francisco. These problems are of immense concern for proper diagnosis, education, and rehabilitation of the cerebral palsied child.

The ophthalmologist plays an important role in aiding the cerebral palsy team by giving an accurate appraisal of the visual, visuosensory, and oculomotor assets. Conversely, he can determine the liabilities of the neuromuscular apparatus of the eyes and make recommendations as to whether the child should be educated as sighted or blind.

The visual handicaps associated with cerebral palsy are outlined with illustrative cases, and with suggestions for aiding or overcoming them.

Due to frequent lack of subjective intercommunication, visual evaluation calls for fine clinical observation and judgment. Newer methods of objective visual evaluation may help greatly. If subjective tests are applicable, the task is much easier. However, usually subjective means of intercommunication are interrupted by the cerebral palsy process which includes hearing and speech defects, and the ophthalmologist must rely on accuracy of observation and skill of objective examination and interpretation of findings. These patients present the most intriguing problems in aiding the ocular handicap, either medically or by optical, physical, or surgical means.

Common Eye Problems in Children. W. A. Wilson. *California Medicine.* Vol. 91, p. 332. December 1959.

Penetrating or lacerating injuries of the eye justify examination under anesthesia to avoid further harm to an uncooperative child. The pediatrician in doubt about an ocular laceration should merely apply sterile pads over both eyes and have an ophthalmologist examine the injury in hospital. Eyes should be bandaged and rest maintained for four or five days to prevent severe bleeding which may occur 48 to 72 hours after nonperforating injuries. Removal of corneal foreign bodies should be followed by

antibiotic treatment and patching to prevent contamination.

Congenital stenosis of the lacrimal duct may clear spontaneously in a few weeks or months, or through application of decongestants and sympathomimetric drops. In cases with chronic infection and profuse discharge the probing should be done at six months or earlier under general anesthesia, preferably in hospital.

Most acute and subacute conjunctivitis is best treated by local application of antibiotics or sulfonamides. For chronic types the addition of steroids has proved beneficial. Bacterial study should be done only if empirical antibiotic therapy fails. The same methods are effective in blepharitis, aided by hygienic measures. Corticosteroids are most useful in allergic inflammations.

Refractive difference is difficult to test before a child can read, and apparent defects may be due to lack of cooperation. Decided inequality of the eyes may signify organic disorder. Strabismus can be detected as early as 12 or 15 months and should be treated as early as possible by proper lenses, by surgery or both. Pediatricians and parents should be aware that many children appear to have strabismus because of wide epicanthi and deep-set eyes.

New Test Charts For the Measurement of Visual Acuity at Far and Near Distances. L. L. Sloan. *American Journal of Ophthalmology*. Vol. 48, p. 807. December 1959.

Certain inadequacies in present measurements of far and near visual acuity have prompted the appointment of a subcommittee by the Committee on Optics and Visual Physiology of the AMA to draw up specifications for new charts. They were developed at the Wilmer Ophthalmological Institute, Johns Hopkins University and Hospital.

The optotypes recommended for testing literate subjects are a specially selected set of 10 capital letters which include vertical, horizontal, oblique and curved contours well suited for determination of the error of refraction. These have been shown to give measures of acuity closely equal to those obtained with Landolt rings which have breaks in horizontal and vertical locations and are used in testing illiterate subjects.

Eleven sizes of optotype between 1.0 minute (20/20) and 10 minutes (20/200) are provided for testing at 20 feet and at a near distance. The latter chart has in addition two sizes larger than 10 minutes. At distance these larger visual angles are obtained by a decrease in testing distance. Additional letters and rings are provided on laminated cards for convenient use at distances shorter than 20 feet.

The charts for testing near distance include alternate forms for use at standard distances of 14 and 16 inches (35 and 40 cm.). The subcommittee recommends the adoption of 40 cm. as the standard.

Occlusor For Vision Screening of School Children. R. H. Bock. *American Journal of Ophthalmology*, Vol. 48, p. 847. December 1959.

A new occlusor device for use in vision screening of young children consists of a mask-like spectacle frame molded in one piece of white plastic. The front plate has a horizontally oval aperture (6.0 × 8.0 mm.) through which vision is tested. A black moustache-like movable arm is mounted on the front plate in such fashion that, as

it is flipped up and down, one peep hole opens while the other is occluded.

In vision screening of school children the primary concern is with the detection of amblyopia because this requires immediate attention. The younger the child the more important is the detection of this condition because the chance of curing it decreases rapidly with advancing age.

The author reports that a total of 5,866 elementary school children in the Sunnyvale, California school district area were tested during the school year of 1957–58 by six school nurses. Using this device 25 per cent more amblyopics were detected than by the conventional methods. During the school year of 1958–59, 4,175 Palo Alto grade school children were examined with the occlusors by seven nurses. In kindergarten alone six amblyopias were found, and in the first grade three previously missed were detected.

The nurses reported success with this method of screening. They made it more interesting by designating one child as the "flipper" who flipped the plate up and down as one eye after another was tested.

Children with infected eyes were excluded from the testing. The occlusor frame is washable.

Finding and Helping the Partially Seeing Child. H. Gibbons and F. Cunningham. *Nursing Outlook*, Vol. 7, p. 524. September 1959.

A close working relationship is needed between the nurse, the teacher and the eye specialist to insure complete understanding of the child's eye condition and assurance that he will receive proper medical attention and placement in school. The role of the school nurse in prevention and correction of visual loss, and in counseling parents, is discussed. Partially seeing children often have greater health problems than the normally seeing.

Visual Problems Above 50,000 Feet. J. L. Curtis. *Armed Forces Medical Journal.* Vol. 10, p. 1304. November 1959.

Empty field myopia and its significance as a deterrent in air-to-air search is stressed as the gravest visual difficulty to be surmounted in high altitude flight. An empty visual field contains no detail upon which the eye can focus. Examples are the cloudless sky at high altitude, total darkness, fog, or a uniformly overcast sky. In the presence of an empty visual field, subjects cannot relax accommodation completely. The person with normal eyesight is thus unable to focus at infinity if it contains no detail subject to sharp focus. Tests performed on 63 patients showed that a target had to be twice as big to be detected in an empty visual field as in one with detail at infinity. Doubling the minimum visual angle results in a tremendous loss in visual effectiveness.

The other visual problems discussed by the author are glare in high altitude flight, light changes on the instrument panel and interior of the cabin as one ascends, cockpit haze, and oxygen lack. He advises research to test the effectiveness of a lightweight visual shield, the upper 60 per cent a yellow filter for distance use with a lens strength of -0.25 diopters, and the lower 40 per cent a clear glass or plastic for close use with a lens strength of $+.25$ diopters, to supplement glasses and to be utilized only at higher altitudes.

BOOKS AND PAMPHLETS

Physiology of the Retina and the Visual Pathway. G. S. Brindley, M.D. Edward Arnold Ltd., London. Exclusive U.S. agents, The Williams & Wilkins Co., Baltimore, Md. 1960. 298 p. $7.50.

The early chapters of this text, a Physiological Society monograph, describe what can be learned of the function of the retina and visual pathway from purely objective experiments of the kind familiar in non-sensory branches of physiology. Most of these observations are electrophysiological and biochemical. Later chapters consider the results of sensory experiments in which an essential part is a human subject's report of his own sensations. An extensive discussion of color vision is included.

The author is a Fellow of King's College and Lecturer in Physiology at the University of Cambridge.

Social Casework and Blindness. Samuel Finestone, Fern Lowry, Martin Whiteman and Irving Lukoff. American Foundation for the Blind, New York. 1960. 158 p. $2.75.

This monograph is addressed to workers whose responsibilities entail helping, on an individual basis, people who are blind to meet those personal and social needs which they have been unable to meet through their own efforts and resources. Its content is meant to be useful to trained and untrained workers alike.

Teachers in schools of social work, social agency supervisors, students and workers in training will find it a useful teaching or learning instrument. Its point of view makes it useful for consideration of casework with persons who are partially seeing and those with other than visual handicaps. It will stimulate a greater awareness of the character of such individual needs and the quality of services required to meet them adequately.

Glaucoma Program Guide. New York State Department of Health, Albany, N. Y. 1959. 44 p.

The emphasis in this booklet is on glaucoma case-finding through permanent detection centers, although components of a glaucoma program also are discussed. Sections on glaucoma as a disease and as a public health problem are included, and the community resources generally available for such a detection program are outlined. Excellent color plates on the anatomy of the eye are a valuable feature.

The Health Department's Bureau of Chronic Diseases and Geriatrics is prepared to help any community in the state in developing a glaucoma program, both by assistance in promoting and organizing detection centers and by providing basic equipment for testing.

Blindheidsoorzaken in Nederland (Causes of Blindness in the Netherlands). Door Dr. J. Schappert-Kimmijser. Organization for Health Research T.N.O. Van Gorcum-Assen. 148 p. 1959.

From the data developed in this investigation the Netherlands General Association for Prevention of Blindness hopes to formulate guiding principles for continuation of its work. With some difficulty sufficient infor-

mation was obtained on about two-thirds of the blind in the country to permit statistical evaluation. It is estimated that in the population of 10,957,000 there are 6,000 blind persons, or 55 per 100,000.

The study indicates that the chief cause of blindness is tapetoretinal dystrophy, including not only the classical forms of dystrophy (former retinitis pigmentosa) but also less well-known types such as Leber's congenital amaurosis. Blindness occurring as part of a syndrome is also classified in this group, which might better be called dysfunction of the retinal neuroepithelium. The importance of this condition is obvious, not only because, with a percentage of 16.5, it is the chief cause of blindness, but also because of 688 cases 140 were children. It is therefore definitely a more important cause than glaucoma which accounts for nine per cent of blindness.

It appears that for children the most important causes are those of genetic origin, and various committees have been appointed by the Association to conduct intensive studies in this field.

A summary and numerous tables in English are included in the report. The data are clearly presented, with excellent typography.

Guiding Today's Children. Los Angeles County Superintendent of Schools Office. California Test Bureau, Los Angeles. 1959. 296 p. $4.75.

Deep understanding of children and their developmental needs is reflected in this guide which was prepared by the Division of Research and Guidance of the Los Angeles County Board of Education with the cooperation of members of other divisions. It is intended as a resource for teachers and administrators in the elementary schools. The importance of close working relationships between school staff, parents and the community is stressed and suggestions for attaining such relationships are described.

A chapter on helping children with vision and hearing difficulties outlines briefly the plan for educating the partially seeing; lists the signs that help the teacher detect eye trouble in her pupils; and describes tools, equipment and techniques used in this branch of special education.

An excellent series of photographs adds greatly to the value and interest of the text.

Home Play and Play Equipment for Young Children. Adele Franklin. U.S. Department of Health, Education, and Welfare. Washington 25, D.C. 1960. 24 p. 15 cents.

The importance of play in helping young children develop their physical and mental powers is emphasized in this booklet issued by the Children's Bureau. It up-dates one with the same title which has been available for a number of years and which has proved helpful to parents in meeting constructively the playtime needs of their children.

Adele Franklin is director of the All-Day Neighborhood Schools in New York City. She tells how a child's play contributes to his learning and development and what he obtains both in playing alone and with other children.

Safe toys and simple materials for play both in and out of doors are suggested. An appendix provides some detailed instructions for building simple and safe play equipment. Parents

are told that while children get much pleasure out of television it may be wise to limit the amount of time a little child spends at the set, since "the passivity of watching TV instead of doing something active is one of its drawbacks."

White House Conference on Aging. Background Paper on Health and Medical Care. Planning Committee on Health and Medical Care, Washington, D. C. April 1960. 116 p.

This "working paper" is offered as an aid to state and local conferences which will be held in preparation for the White House Conference on Aging to be held January 9–12, 1961. Technical directors and consultants have assisted this sub-committee in its preparation with the hope of saving time and duplication of effort on the local level when seeking background and factual information.

Included are facts relating to changing age distribution of the population; health status of the aging; medical care requirements, costs and expenditures; training of personnel; and community health programs.

Planning America's School Buildings. School-Building Commission. American Association of School Administrators, Washington 6, D. C. 1960. 230 p. $6.00.

In the preparation of this book the School-Building Commission drew on the experiences of hundreds of people, including teachers, supervisors, administrators, architects, engineers, school-board members and school-plant specialists.

In the minds of the Commission members the school plant is a translation of the curriculum and all that it involves into teaching facilities and space. As such, well-planned buildings assist in achieving the basic purposes of education. Thus this text is an aid to curriculum makers as well as to school planners.

Various chapters deal with the physical environment, space and facility needs, beautification, prediction of pupil population, choice of site, costs, rehabilitation of existing buildings, maintenance and operation. The book is designed as an aid to school boards, administrators, architects and community leaders in the hope that they will find it "pointing to the future with courage and imagination, and at the same time, holding fast to those aspects of the past that are enduring."

Guide to Traffic Safety and Literature. National Safety Council, Chicago. Vol. 3. 72 p.

Formerly the *Index of Traffic Safety Information*, this pamphlet brings together pertinent information on traffic safety according to subject interest. This issue covers articles, pamphlets and books printed during 1957 and 1958 and received in the library of the National Safety Council. They relate either to the technical aspects of traffic problems or to the development of traffic safety programming.

Two helpful lists, "Addresses of Periodicals Indexed" and "Directory of Publishers and Organizations" are included.

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OPHTHALMOLOGY

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